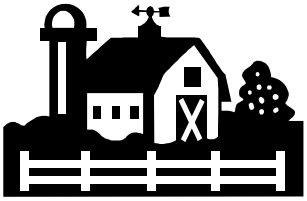
UK COOPERATIVE EXTENSION SERVICE
University of Kentucky – College of Agriculture

LEXINGTON, KY 40546

GREEN COUNTY AGRICULTURE NEWS

Improving Cow Comfort Through Proper Neck Rail Placement

October 2008



Lying behavior plays a critical role in the production potential, profitability, and well-being of dairy cattle. Dr. Rick Grant (Miner Institute) suggests that productive dairy cows require 12 to 14 hours of lying or resting time per day. Research has demonstrated that depriving cows of adequate lying time may result in physiological and behavioral stress, increased lameness, altered feeding behavior, and reduced milk yield. The amount of time a cow spends lying is influenced by many factors including facilities, management, and the physiological status (i.e days in milk, milk yield, pregnancy status) of the animal. In managing dairy cows, we need to do everything we can to ensure that cows have the opportunity to fulfill their lying time requirements. The first step in this process is making sure cows always have a comfortable place to rest. Obviously, in a freestall barn, freestall design and dimensions are essential components of this comfortable resting place. Contrary to popular belief, this does not mean you need to tear down your existing freestall barn to improve lying time in your dairy herd. Many dairy herds could observe dramatic improvements in lying time by making some minor, relatively simple changes to existing freestalls.

As I have travelled across Kentucky these past few months, I have noticed quite a few herds with cow comfort limitations related to improper neck rail placement. The neck rail helps position the cow when she enters the stall or when she is standing in the stall before or after standing up. Additionally, the neck rail helps encourage cows to preserve lunge space and defecate in the manure alley. One way we can evaluate neck rail placement is by observing cows for perching behavior. "Perching" refers to the behavior when cows stand with their front feet in the stall and their rear feet in the alley behind the stall (Figure 1). Generally, this behavior indicates improper neck rail placement. If neck rails are too low, cows may also be hesitant to enter the stalls and have difficulty standing up. When the neck rail is in the proper position, cows will stand with all four feet placed squarely within the stall, level backs, and the top of their necks gently touching the neck rail (Figure 2).

For large-frame dairy cattle, the distance between the top of the stall bed (including bedding) and the bottom of the neck rail (also referred to as neck rail height) should **be 48 to 52 inches**. The horizontal distance from the alley side of the rear curb to the neck rail **should be 68 to 70 inches**. Early freestall designs recommended a much shorter neck rail height; however, experience and research have shown that these older recommendations were wrong. Unfortunately, many existing freestalls were built according to these older guidelines creating the need for modifications now. In many situations, the neck rail can be moved without any major modifications. Dairy producers should use their engineering ingenuity to determine the best modification for their facility. Wisconsin researchers (Fulwider and Palmer, 2004) demonstrated that the percentage of stalls with cows lying in mattress based freestalls was significantly higher with a 50 inch neck rail (51.4%) when compared to stalls with a 45 inch neck rail (40.0%). So, dust off that tape measure, walk out into your freestall barn, and determine where your neck rail is placed. If you find the measurements are outside of the recommendations above, consider modifications to improve cow comfort and stall usage within your freestall facility.

Green County Cooperative Extension Service

106 S. Public Square
Greensburg, KY 42743

Telephone:
(270) 932-5311

Fax:
(270) 932-4390

Email:
bnewman@uky.edu

Website:
http://ces.ca.uky.edu/green/

Brian S. Newman

Brian S. Newman,
County Extension Agent
for Agriculture &
Natural Resources

Matching Pasture Quality to Animal Needs

Now more than ever, it is important to make the most efficient use of our forage resources. Supplemental feed is very costly and must be used judiciously. We need to keep grazing cattle on pasture for as long a period as possible and feed only as necessary. As we do that, we must be sure that we are meeting the nutritional needs of the cows and calves. Most of our pasture systems are based fescue pastures. The typical production pattern for a cool season perennial like fescue is shown by figure 1. There is very little growth from February 15 to early April and fescue may almost go dormant from late July through August. Thus, these two periods are critical in the management of beef cattle. If adequate grass isn't available, stored or purchased feed must be utilized.

So, what is the most critical time in the production year for a beef cow? Nutritionally speaking, it is the time from calving to rebreeding. Usually a period of 70 to 90 days. Not only do we have to meet the nutritional needs of the cow at that time, but they should approach calving time in good body condition and stay in good condition until they are rebred.

That critical period of time is usually from late February until late May in spring calving cows. Which means that cows need to be fed extra feed from calving time until they are turned out onto good pasture (usually from late Feb. to April 10th). The challenge is by the time calves become less dependent on milk and can use more forage (about 3 months of age) fescue pastures diminish in quantity and quality – the summer slump. We need to consider a portion of pasture which grows during that period of time to keep spring-calves growing in July/August.

Fall calving cows are "dry" during the summer forage slump and can be rebred during December and early January when accumulated fescue pasture is available. However, calves will need extra feed (creep feed or grazing) after the accumulated fescue is used up.

We have completed a three-year study of 5 different forage systems using fescue-based pastures at Princeton. Table 1 shows 3 of those systems for us to consider here – 2 of which are spring-calving systems and 1 is fall-calving. Each system consisted of 15 cow-calf pairs on 24 acres of pasture for 3 years. The goal was to graze about 10 months – feeding from about February 15 to April 15.

In each group, cows were in a body condition score of 5+ at the start of the breeding season – when cows were AI'ed using timed insemination. Pregnancy rates were similar for both spring calving groups – 89% for high endophyte and 91% for low endophyte. The fall group had a pregnancy rate of 96% with 71% pregnancy rate for the one round of a timed AI.

Calves that were born in the spring tended to be about 10 pounds heavier at birth (90 and 87 lb for HE and LE, respectively) than those born in the fall (79.6 lb). The same bulls were used AI throughout the trial and clean-up bulls were rotated across treatments. Spring calves were weaned on an average of October 17 when pasture became limiting and fall calves were weaned on June 1. The actual weaning weights were 581, 587 and 652 lb for spring/low, spring/high and fall/high, respectively. It is important to note that fall calves were older and received soyhulls as creep feed.

The most important thing to glean from this trial is that we can have forage management systems which are built around high-endophyte fescue that will perform similarly to low-endophyte systems if we meet the animals' nutritional needs at critical times. Spring calving cows must come out of the winter-feeding period in good body condition (a BCS of 5 means that there is enough flesh to cover all of the ribs and spinous processes) and re-breed early for acceptable pregnancy rates.

Calf gains were also similar for both spring groups. Remember that pastures were rotationally grazed (6-4 acre blocks) and bermudagrass (⅛ acreage) was available to graze during the summer slump period. Very little was gained by overseeding bermudagrass with cereal rye for winter grazing.

Continued on page 3

Matching Pasture Quality to Animal Needs *Continued from page 2*

There are many forages and combinations of forages that will work for cow-calf production in Kentucky, but most will (1) be based on fescue, (2) insure that cows stay in good body condition especially at breeding, (3) meet the nutritional needs of cows and calves at critical times, and (4) rotational grazing is a vital method of stretching (or allotting) the forage supply. Using these management systems with a stocking rate of 1.6 acres per cow gave us enough grazing for about 10 months but did not allow for hay production – although it certainly minimized the need for stored feed.

Table 1. Three Management Systems for Cow-calf Production, UK-Princeton (3 years)

Calving season:	Spring	Spring	Fall
Endophyte:	High	Low	High
Forage (acres):	Fescue-clover (8)	Fescue clover (8)	Fescue-clover (12)
	Fescue-N (12)	Fescue-N (12)	Fescue-N (12)
Item	Bermuda/Rye (4)	Bermuda/Rye (4)	w/creep feed
Cow-calf pairs/yr	15	15	15
Cow data			
Wt. @ breeding, lb	1288	1265	1290
BCS @ Breeding (1-9)	5.4	5.5	5.3
Pregnancy rate, no (%)	40/45 (89)	41/45 (91)	43/45 (96)
Timed AI rate, no (%)	27/45 (60)	22/45 (49)	32/45 (71)
Calf data (Avg. of 45/trtmt)			
Birthdate	Mar. 6	Mar. 11	Sept. 24
Birthweight, lb	90.2	87.2	79.6
Wean date	Oct. 17	Oct. 17	June 1
Actual wean wt, lb	581	587	652

9Th Kentucky Grazing Conference – Lexington, October 23, 2008

The 9th Kentucky Grazing Conference is set for the Fayette County Extension Office on October 23. The program committee has done an excellent job putting together a timely agenda with excellent topics and speakers. Registration fee is $15.00 ($5.00 students) and includes breaks, meal, proceedings and other educational materials. No pre-registration is required. Details of the program topics and speakers are on our website at: http://www.uky.edu/Ag/Forage/9th%20KGC%20Program%20columns.pdf and will be in next month's Forage News.

FROST BRINGS DANGER: PRUSSIC ACID POISONING

As we move into October the likelihood of frost increases. The best way to prevent losses from Prussic Acid is to be aware and plan ahead. The following information will help to be aware and prepared.

The primary cause of hydrocyanic (prussic) acid poisoning in domestic animals is the ingestion of plants containing this potent toxin. Cyanide-producing compounds (cyanogenic glucosides) occurring in living plant cells are converted to prussic acid when cells are crushed or otherwise ruptured.

The prussic acid potential of plants is affected by species and variety, weather, soil fertility and stage of plant growth. Plants of the sorghum group and leaves of wild cherry trees have a potential for producing toxic levels of prussic acid. There are wide differences among varieties. Some of the sudangrasses are low in prussic acid. Pearl millet is apparently free of prussic acid in toxic amounts.

Cause: Prussic acid is one of the most potent toxins in nature. As ruminants consume plant materials containing cyanide-producing compounds, prussic acid is liberated in the rumen, absorbed into the bloodstream and carried to body tissues where it interferes with oxygen utilization. If toxin is absorbed rapidly enough, the animal soon dies from respiratory paralysis.

Symptoms: When lethal amounts are consumed, dead animals may be found without visible symptoms of poisoning. Symptoms from smaller amounts include labored breathing, irregular pulse, frothing at the mouth and staggering.

Prevention: Forage species and varieties may be selected for low prussic acid potential. The risk from potentially dangerous forages may be reduced by following certain management practices:

1. Graze sorghum or sorghum cross plants only when they are at least 15 inches tall.
2. Do not graze plants during and shortly after drought periods when growth is severely reduced.
3. Do not graze wilted plants or plants with young tillers.
4. Do not graze for two weeks after a non-killing frost.
5. Do not graze after a killing frost until plant materials is dry (the toxin is usually dissipated within 48 hours).
6. Do not graze at night when frost is likely.
7. Delay feeding silage 6 to 8 weeks following ensiling.
8. Do not allow access to wild cherry leaves whether they are wilted or not. After storms, always check pastures for fallen limbs.

When in doubt, don't graze.

UK Ag