
GEORGIA DAIRYFAX

September/October 2001

DS 1-3

IMPROVED HEIFER MANAGEMENT WILL PAY DIVIDENDS

James W. Smith
Extension Dairy Scientist

The sale of milk is the primary source of income on most dairy farms. However, other enterprises on the farm can have a significant effect on net income. One such enterprise is raising replacements.

The number of replacement heifers required to maintain the size of a milking herd is dependent on (1) the milking herd cull rate, (2) the percent calf and heifer mortality, and (3) the average age at first calving. Table 1 shows the effect of average age at first calving on the number of replacements required to maintain a 200 cow milking herd. A 36 percent cull rate for the milking herd and a 5 percent heifer mortality rate are assumed. Twenty-five more heifers would be required in the heifer herd to maintain a 200 cow milking herd if average age at first calving were 28 months compared to 24 months. Currently, the average age of first calving in southern DHIA herds is about 27.5 months.

The obvious advantage of needing fewer heifers is the reduction in the total cost of raising replacements. Also, more intensive selection can be imposed when choosing which heifers to raise which will eventually impact herd production. Some producers may choose to raise most of their heifer calves. By calving them out at an earlier age, the excess heifers may be sold or used in herd expansion. Profitability will be enhanced with either situation.

Improved heifer management will pay dividends. Two programs available this fall will help sharpen your calf and heifer management skills. The Professional Dairy Heifer Growers Association in cooperation with Southeast Land Grant Universities is sponsoring a program and Field Day at Tifton on October 23-24. Contact Dr. John Bernard for details at (229) 386-3364. The Southeast Dairy Herd Management Conference scheduled for November 13-14 at the Georgia Farm Bureau Building in Macon will include several topics on calf and heifer management. Contact Dr. Jim Smith for details at (706) 542-9108.

Table 1. Effect of Age at First Calving on Number of Replacements Required to Maintain a 200 Cow Herd¹

Age at Calving (Mos.)	Replacements Required
24	151
25	157
26	164
27	170
28	176
29	183

¹Cull rate = 36%; heifer loss = 5%.

THE FIRST FROST CAUSES PRUSSIC ACID AND NITRATE PROBLEMS

Lane O. Ely and James W. Smith
Extension Dairy Scientists

With the first freeze this fall, questions again arise about prussic acid. Prussic acid or hydrocyanic acid (HCN) is formed from dhurrin, a non-toxic cyanogenic glucoside, after plant tissue is injured or damaged. This can occur following a frost. The prussic acid is typically concentrated in the growing leafy parts of the plant that animals selectively consume when grazing. The problem most commonly occurs with sorghums, sudangrass or Johnsongrass.

Following consumption of forage, HCN is released in the rumen and absorbed in the blood stream. HCN combines with hemoglobin in red blood cells to form cyanoglobin. HCN prevents the transfer of oxygen from hemoglobin to the tissues. Symptoms of HCN toxicity include increased rate of respiration, increased pulse rate, muscle tremors, and foaming from the mouth. Clinical signs of HCN poisoning are seldom observed since death often occurs within 15 to 20 minutes following intake of toxic forages. A characteristic symptom is the bright red color of the blood.

Increased nitrogen levels in the soil contribute to higher HCN content. An imbalance of nitrogen and phosphorous will increase HCN. An adequate level of phosphorus in the soil tends to decrease HCN levels.

Grazing is the most dangerous method of feeding susceptible forages. Cattle may select shoots and leaves which are higher in HCN. Under normal growing conditions, do not graze until plants are 20 inches tall. HCN is in the rapidly growing portion of the plant. After a frost, do not graze for 7 to 10 days of frost free weather.

Properly conditioned and cured hay is usually not dangerous. The HCN is released during field curing. Ensiling a crop does not destroy HCN. The gas escapes during the moving and feeding process. Allow the crop to undergo a complete fermentation (3 to 4 weeks) before feeding. Feeding green chop is usually less dangerous than grazing because the animals can not select the leaves and shoots, but the same precautions apply.

Use extreme caution after a frost and keep animals away from susceptible forages.

Normally, we are concerned with high nitrate problems in forages during summer droughts. After fertilizer application, plants take up nitrogen and store it as nitrates. As the plant grows, the nitrate is converted to plant proteins. During drought the plant growth stops and the nitrates remain concentrated in the plant. This can also happen in the Fall following a frost, especially with small gains.

Weather conditions in the fall can lead to nitrate problems. Since the summer was dry in many areas, many producers planted small grains early. With timely showers this Fall, the small grains will respond with good growth. Many producers have used Fall grazing because of the early growth. With the first killing frost, plant growth stops and there is the potential for nitrate problems if grazing continues. This is especially true if there has been a heavy application of fertilizer.

Since the small grains will not be harvested until Spring, use caution if grazing in the early Fall. Be sure not to over fertilize. Split applications will lessen the chance of high nitrates.

Take forage samples to test for nitrates before grazing.

More information can be found on the web at www.ces.uga.edu/pubcd/b1153-w.html.

TIFTON DAIRY RESEARCH CENTER UPDATE

John K. Bernard and Joe W. West
Dairy Research and Extension

CURRENT SITUATION:

Like most dairies, things have been busy here. We managed to get our winter annuals chopped and bagged between rains in March. That put us two weeks behind in planting corn, and after a dry start, we had rain at some critical times which helped make a good crop of corn silage. All of the corn has been harvested and packed in the bunker and the preliminary number's look like we averaged 18.5 tons per acre at 35% DM.

Last fall we used the Ov-Synch program for breeding our cows and had very good success. We have dried-off approximately 40 cows in July from the first group on the program, so we will be extremely busy calving in late September and early October. With the addition of some purchased heifers, we should be milking approximately 190 cows by late October.

For the past two years we have been raising our bull calves. These calves are fed waste milk and starter and at weaning they are castrated and adapted to silage. We clean the feed bunks of the milking herd each day and use this to feed the steers. The steers are sold when they weigh 500 to 600 lbs. and have averaged approximately \$350 per head. This is another tool we have used to generate the operating budget for the dairy.

As this article is prepared we are interviewing candidates for the dairy manager position. Our previous manager, John Smith, decided to resign and return with his wife to Florida. We will miss him but look forward to employing someone to provide the day-to-day management of the dairy as we continue to work to fill the facility.

RESEARCH:

Several trials have been conducted over the past year and we are attempting to complete the laboratory analysis and publish the results. Some of the results will be discussed in more detail at the Southeast Dairy Herd Management Conference in November, but key findings are summarized below.

When feeding high quality ryegrass silage (> 20% CP, DM basis), feeding a blend of ryegrass and corn silages improved yield of energy-corrected milk because of small improvements in milk yield and fat percentage. Supplementation of the diet with steam-flaked corn significantly increased milk yield (~ 6 lbs.), but decreased milk fat percentage. Blood urea nitrogen concentrations were decreased when steam-flaked corn was fed compared with finely ground corn. These results indicate that diets containing high quality winter annuals should provide adequate amounts of fermentable carbohydrate to utilize the nitrogen provided from these forages. A grant has been secured from the Florida milk checkoff to continue this work later this year to examine the potential of hominy compared with finely ground corn or steam-flaked corn along with different combinations of corn and ryegrass silages.

When anionic salts are fed prepartum, additional calcium is added to the diet to maintain proper calcium balance. Results of a study where either 109 or 165 grams of calcium were supplemented per cow per day indicate that 109 g of calcium was adequate to prevent milk fever and maintain calcium balance. The results of the study also confirmed that prepartum intake is highly correlated with postpartum intake, which indicates that the better cows are eating prior to calving, the better intake we can expect after calving. This research was

conducted by Pooi-See Chan as her master's degree research. Pooi-See has now successfully completed her research with the transition dairy cow and will start her Ph.D. studies at Michigan State University this fall. We wish her well.

A summer heat stress study is being completed. Cows were fed diets with moderate and high levels of buffers (alkaline cation-anion difference) with different ratios of potassium to sodium. We are trying to determine the optimum concentrations of minerals to enhance intake and milk yield during hot weather. This work is the beginning of the Ph.D. research for Chris Wildman who is a graduate student from Louisiana. He will continue to conduct heat stress studies for his Ph.D. research here at the Coastal Plain Experiment Station.

In a sand bedding study we observed that the bacteria counts in free stalls bedded with recycled sand were similar to those observed for fresh sand. We used an average of 42 lbs. of sand per free stall each day to maintain the free stalls without any sand saving devices. The amount of sand required to maintain the stalls was reduced to approximately 28 lbs. per stall with some of the sand saving devices installed in the free stalls. We are continuing to measure sand usage and will be repeating the study this fall. When the equipment arrives, the compaction of the free stalls will be measured to provide a different evaluation of the various materials we have installed. Additional information will be presented at the Southeast Dairy Herd Management Conference.

DATES TO REMEMBER

October 5-14	Georgia National Fair Livestock Shows, Perry, GA
October 16-18	Sunbelt Expo, Spence Field, Moultrie, GA
October 23-24	Professional Dairy Heifers Association, Tifton, GA
November 13-14	Southeastern Dairy Herd Management Conference, Macon, GA
January 29-30	Georgia Milk Producers Annual Meeting, Perry, GA

DISCLAIMER

Permission to reprint material is granted provided the meaning is not changed and credit is given to the author and publication source. As a courtesy, please send a copy of the publication to the author.

Product names are used for the sake of clarity and in no way imply endorsement of that product over a similar product which may be just as effective.

DAIRY TIPS

W. M. Graves
Extension Dairy Scientist

The following tips may be useful in managing your dairy operation:

- g During those months that producers have good milk prices, try to pay off some of your debts as well as save for those periods when milk prices are lower.
- g Take advantage of opportunities to save on feed costs by comparing prices for concentrate feeds or commodities. A few minutes on the phone may be the best way to make quick savings in feed costs. Look for an unbiased opinion for advice on least costs ration balancing through your county Extension office or Dairy Extension staff.
- g If you are not on DHIA record-keeping programs, enroll to take advantage of information that can be used effectively to manage the herd on a daily basis. Ask your Extension agent or Dairy Extension staff about being enrolled on PCDART on your home computer. A new program using hand held computers called Pocket Diary is now available and becoming very popular.
- g Use your highest-quality forages for feeding high-producing cows. Lower-quality forages should be fed to lower-producing cows, dry cows and heifers.
- g Don't forget to feed and manage your replacement heifers during this time, as deficiencies in this area now will cause major problems later. Small, underdeveloped heifers will not milk well and may have a lower productive life. Heifers that are too fat will not produce as much milk.
- g Continue to breed all animals to the top AI bulls available in your breed. Using a natural-service bull will return lower profits in the future. Herd bulls are dangerous and genetically inferior.
- g Have routine veterinary checks to determine reproductive problems and verify pregnancies. Extra days that animals are open can result in costs of \$2.00 per day of loss of income per animal for each day open over 100 days. Average days open for Georgia producers on test is over 180 days.
- g Spend quality time in the milking parlor to harvest all of the milk produced by each animal. Sanitation and milking hygiene pay huge dividends.
- g Continue to have milking machine checks at least every six months to maintain equipment in optimum working condition.
- g Sample and culture milk from cows experiencing udder infection to identify the causative organism. Loss of milk from cows with udder infection can lower profits. Use antibiotics for treating mastitis wisely and safely. Prevent antibiotics from getting into the milk supply.
- g Manage your animal waste to prevent pollution of the surface and groundwater. Be aware of the need to prevent contamination of our water supply.
- g Develop your skills in working with your labor force. Management is important to the success of a team effort. Designate job responsibilities in writing.
- g Effective use of animal manure will save on fertilizer costs.

- g Develop a management plan with obtainable goals for your dairy operation. Expect results from your employees.

PRICING SILAGE

Lane O. Ely
Extension Dairy Scientist

More dairy producers are looking to buy silage as they increase herd size and have reduced home grown grain forage supplies. The opportunity to focus on the dairy herd is another reason dairy producers are looking to purchase silage. Many crop producers are looking to sell their crop as silage because with low grain prices, the silage may be worth more. It is necessary for the parties to agree on a price. There are no hard and fast rules as to the value of the crop, but the rules of supply and demand apply. The value of silage may not change much in relationship to grain price, but the potential return for the grain farmer may be very different.

Here are some guidelines that I believe both sides must consider in order to reach an agreement that is satisfactory.

The dairyman must determine a nutritive value for the silage to be purchased. In this example, corn silage will be the forage that will be evaluated. The nutritive value would be the value of the silage in the feed trough for the dairy cow to eat. Using a ration balancing program, one can calculate this value. Using the feed ingredients available, their prices and the requirements for production, the value can be calculated for a particular farm and feeding program. This price is not a constant but will change with different feeds and prices availability.

In this example, corn silage is valued at \$34.50/ton in the ration. This would be considered the top price a producer should pay since other feeds could replace the nutrients supplied by the silage. In order to obtain a large supply of silage, a premium may have to be added to the top price.

The crop farmer needs to calculate his cost for putting in the crop and growing it to harvest stage. This would include land preparation, seed, fertilizer, cultivation, herbicide, pesticide and irrigation. For example, if these costs were \$300/acre planted and if the estimated silage yield is 20 tons, then \$15.00/ton would be considered the bottom price the crop farmer would accept as this is his break even cost. Remember this is not his normal cost of production because we have not included combining or drying costs. With these two prices, we have a range for negotiating a final price.

Factors needed for this negotiation would include harvesting costs for silage, hauling cost to silo and the cost of filling the silo. One also has to figure about a 10% loss due to fermentation and a 5% loss during feed out. These values will vary with the type of silo and crop being ensiled.

In our example, if the dairy farmer is going to do the harvesting and filling he should include those costs. Harvesting costs may be \$2.10/ton for the 20 tons harvested. Distance to the silo needs to be figured in as different fields may have different costs. A 10% fermentation loss from our \$34.50 value would be \$3.45/ton and a 5% feed out loss would be \$1.72/ton. The value per ton for the standing crop in the field would be: $\$34.50 - (\$2.10 + \$3.45 + \$1.72) = \$27.23/\text{ton}$. This represents the top price for the standing crop in the field that would be delivered to the feed trough after ensiling.

The dairyman and crop farmer need to agree on a price per ton between \$15.00 and \$27.23, realizing that both can make a profit. They will also have to agree on how yield is calculated and if there will be any adjustment for moisture and nutrient composition.

If a crop grower is selling to several farmers, he will want to have a simple pricing scheme that would offer the

same price to everyone. Many silage sellers use a price based on moisture content. For example, at 30% dry matter the silage is priced at \$30/ton. This results in a value of \$1/ton for every 1% of dry matter. This results in a price of \$40/ton for 40% dry matter or \$26/ton for 26% dry matter. This results in line A in Figure 1. This pricing does not result in any value for changing composition of the silage, nutritive quality and fermentation potential of the crop. Line B below represents a price with changing dry matter that reflects lower value to the dairy cow at high and low dry matters.

Another simple price structure is to multiply the price of grain/bushel times 10 to get a silage price/ton. For the dairyman, this often does not reflect the nutritive value of silage and the crop farmer may drastically under value the silage during periods when excess grain production and the grain price is low.

Guidelines can be established to set a price range for silage, but negotiations, and supply and demand will set the final price. The parties need to discuss the price and recognize the other's viewpoint to arrive at a fair price.



SOUTHEAST DAIRY HERD MANAGEMENT CONFERENCE

The 2001 Southeast Dairy Herd Management Conference is scheduled to be held at the Georgia Farm Bureau Building in Macon (1620 Bass Road, Exit 56 off I-75) Tuesday, November 13 and Wednesday, November 14.

The conference will begin with a technical session for agri-business representatives and veterinarians on the afternoon of November 13. An all day dairy producers session is scheduled for November 14. **Anyone is welcome to attend either or both sessions.** Registration fees are \$50.00 per person or farm for both days (\$30.00 - one day). Advance registration is not required.

Technical Session Tuesday, November 13, 2001

Morning

11:30 **Conference Registration**

Afternoon

1:00 **Welcome** - Mr. Wayne Dollar and Dr. Larry Benyshek

1:15 **Using Recycled Sand in Free Stalls** - Dr. John Bernard

1:35 **Dietary Anion Cation Difference Update** - Dr. Joe West

1:55 **Comparison of Nutrient Content and Digestibility of Traditional versus Genetically Modified Whole Cottonseed** - Dr. Jean Bertrand

2:15 **New DHIA Tools for On Farm Decisions** - Dr. Dan Webb

2:45 **Refreshment Break**

3:15 **Feeding for a Healthy Rumen** - Dr. Larry Muller

4:00 **Management of Natural Service Sires** - Dr. Warren Gilson

4:20 **Influence of Mastitis on Reproduction** - Dr. Steve Oliver

5:00 **Passive Immunity in Newborn Calves** - Dr. Jim Quigley

5:30 **Questions**

5:45 -
7:30 **Reception**

Producer Session Wednesday, November 14, 2001

Morning

8:00 **Conference Registration**

9:00 **Welcome** - Mr. Wayne Dollar and Dr. Larry Benyshek

9:15 **Mastitis Control During the Dry Period** - Dr. Steve Oliver

9:45 **Monitoring and Evaluating Dairy Performance** - Dr. Larry Muller

10:30 Refreshment Break

11:00 **Keeping Calves Healthy During the First Two Months of Life** - Dr. Jim Quigley

11:45 **Lunch (On Your Own)**

Afternoon

1:00 **Replacement Heifer Nutrition and Management - Managing for Hot Weather** - Dr. Joe West

1:30 **Using Annual Rye Grass in Diets for Lactating Cows** - Dr. John Bernard

2:00 **Alternatives, Costs and Benefits of Herd Synchronization Programs** - Dr. Bill Graves

2:45 **Questions**

3:00 **Adjourn**