

2003 Florida Dairy Business Conference

Ocala, FL
October 22, 2003

“Herd replacement practices of Florida dairy farms”

B. L. Butler – Department of Animal Sciences, University of Florida

Summary

- Percent of cows culled for low milk production has declined since 1995
- Higher heifer prices were associated with a lower cull rate for low milk production
- Total cull rate remained the same over time
- Seasonal effects in Florida and Georgia on productive life of heifers are substantial
- Calving in November through May maximizes productive life, lifetime milk and average daily milk while minimizing 1st lactation cull rate
- Calving in July has the worst effects on a cow’s productive life, lifetime milk, average daily milk and survivability

Introduction

The Florida dairy industry has witnessed some challenging times in the last two years. Depressed milk prices and inflated replacement heifer prices have forced dairy managers to find ways to get more out of their herds. This paper will 1) analyze the culling trends in Florida herds, while attempting to make a correlation with culling and commodity prices during the period January 1995 through March 2003. In addition this paper will 2) quantify performance measures associated with a heifer’s initial month of calving.

Cull Rates

Current culling trends were evaluated using DHI data from Dairy Records Management Systems located in Raleigh, NC. The data set was limited to only herds with continuous data from January 1995 to March 2003. The refined data set included over 136,000 cows present in 62 Florida herds. The herds were grouped by average cow numbers. Twenty herds were classed as small herds, having 50 to 250 cows. Thirty-four herds were classed as medium herds, having 250 to 900 cows. Eight herds were classed as large herds, having 900 to 3500 cows. Average cow numbers per herd in the data set steadily increased from 505 in 1995 to 605 in 2002.

Culling rates were calculated from the herd averages and are shown in Figure 1. The all herd, annual culling rate remained approximately constant at 33% over the time period, with the peak occurring just over 35% in 1998. When broken into the herd size classes, more variability was noted. Medium size herds followed the same culling trend as the all herd average, averaging 35%. Small herd culling rates ranged from 22% in

1997 to 33% in 1998, while averaging 28%. Large herds had a 35% average cull rate, ranging from 37% in 1998 to 33% in 2001.

Voluntary cull rates were calculated from the data set by dividing the cows culled for low production or dairy purposes during the year by the average cow numbers for the year. The all herd voluntary cull rate decreased during the period, from nearly 8% in 1995, to 3.5% in 2002. When broken down into herd size basis, large herds maintained the highest overall voluntary cull rates, ranging from over 8% in 1997 to fewer than 3% in 2002. Small herds had the smallest annual voluntary cull rate, following the trend of the medium sized herds.

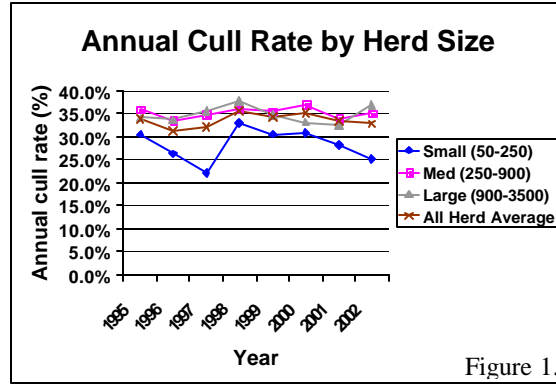


Figure 1.

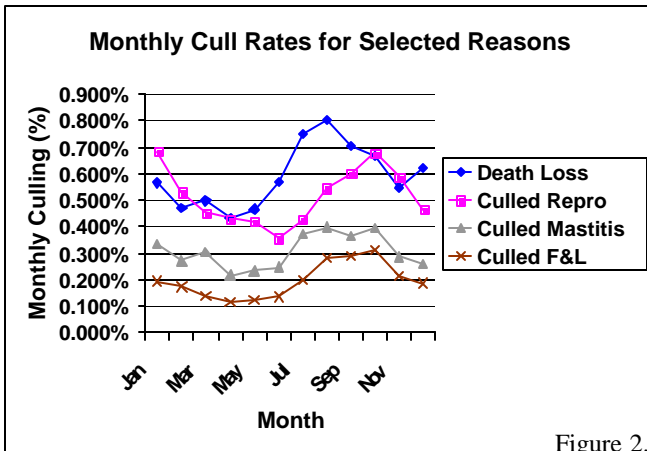


Figure 2.

The data set included reasons for culling, including involuntary culling for reproduction problems, mastitis, feet and legs and death loss. These values are listed in figure 2, all four of which showed substantial seasonal variation. The majority of these culls occurred during the summer and fall months. Death loss was the highest, averaging 0.6% cull rate per month.

The question arose as to certain dairy commodities prices' affect on culling. To calculate this, data obtained from USDA National Agricultural Statistics Service on dairy replacement heifer prices, slaughter cow prices, all Florida milk prices and the milk to feed ratio were used to compare to the culling rates. Each of the prices were compared to the cull rate, voluntary cull rate and low production cull rate to determine if there was a correlation. Figure 3 shows that the only significant correlation which existed was heifer price being negatively correlated to the low production cull rate, suggesting that as the heifer price increased, the cows culled for low production decreased.

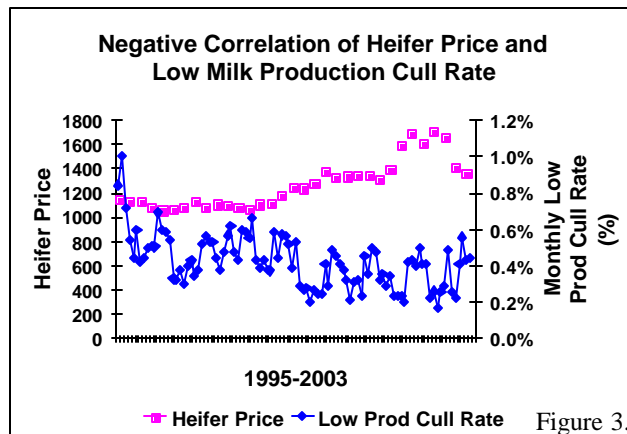


Figure 3.

While the correlation between the low production cull rate and heifer prices was significant, heifer prices can not be assumed as the only reason for the decrease in the cull rate. Other factors such as seasonal and low milk price or yearly variation could be

more responsible for the observed decrease. The relationship of milk price to heifer price may also be responsible for the variation. Again, there too many factors to say one way or another.

Heifer Month of Calving

Seasonality has been shown to affect milk production, reproduction and involuntary culling of dairy cows. However, if the effects of season on cow performance and productive life were quantified, it could help determine the optimal month to calve heifers. Using a separate data set, the seasonal effects of a heifer’s first month of calving on productive life and lifetime milk was calculated. Productive life was calculated as the days between first calving and culling. Lifetime milk is defined as the total amount of milk produced between first calving and culling. The data set was obtained from DRMS for Florida and Georgia cows and was limited to cows with culled records in 2000. The set included 52,620 cows, 22,728 from Georgia, 20,721 from North Florida and 9,161 from South Florida.

Monthly average productive life of cows calved for the first time in January

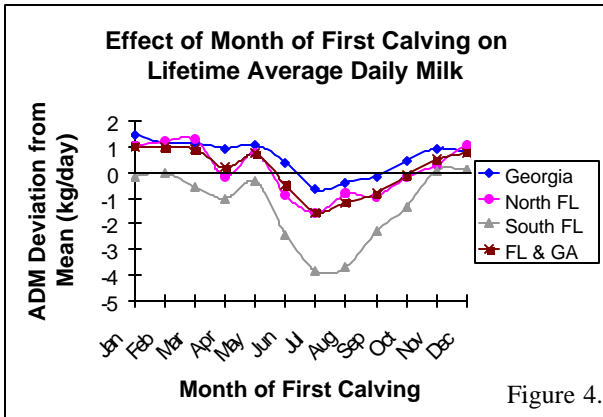


Figure 4.

through December were respectively 971, 971, 972, 936, 960, 845, 808, 862, 880, 928, 950, and 970 days.

Corresponding lifetime milk productions were respectively 21688, 21558, 21641, 20339, 21249, 18549, 17802, 19168, 19621, 20773, 21312, and 21646 kg.

Figure 4 shows the lifetime average daily milk variation. Lifetime average daily milk is calculated as lifetime milk divided by productive life. First lactation cull rates were respectively 27.1%,

28.7%, 28.2%, 29.1%, 27.8%, 37.4%, 39.7%, 33.3%, 33.4%, 29.1%, 27.8%, and 27.7%. The effect of month of first calving was not significant for the monthly cull rate of older lactations.

It was concluded that the month of first calving has significant effects on productive life, lifetime milk production, and first lactation cull rate. Cows calving for the first time in July had the shortest productive life, lowest lifetime milk production, and highest first lactation cull rate. The range between July and the most favorable month were 164 days of productive life, 3886 kg milk, and 12.4% first lactation cull rate. These results will likely have implications for optimal scheduling of reproduction, milk production, and cow replacement in Florida and Georgia.