University of California Cooperative Extension

The Grazer's Gazette

A Newsletter about Livestock, Pastures and Rangeland **Volume 4: Number 3• November, 2005**
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The following article on fenceline weaning in beef cattle by UC Davis Animal Scientist, Ed Price, shows how, by understanding behavior and changing practices, improved welfare and productivity are possible.

Introduction

In the management of beef cattle herds, calves are usually artificially weaned from their dams at 6-7 months of age. Separation of the dam and young is typically abrupt. Abrupt total separation of dam and young is often accompanied by behavioral indices of psychological distress such as incessant vocalization, pacing along fencelines, and reduction in food intake. These changes in behavior are typically accompanied by a temporary reduction in growth rate. The beef cattle industry would benefit from alternative weaning procedures that reduce the negative effects of abrupt, total separation of cows and calves.

Objective

The purpose of this study was to determine the extent to which fenceline contact between beef cows and their calves at the time of artificial weaning reduces indices of behavioral distress and associated temporary reductions in weight gain.

Procedures

In each of three years (1998, 1999 and 2000), 100 seven-month-old Angus/Hereford-cross calves were randomly assigned to five treatments (20 animals each). The treatment of primary interest was fenceline separation from dams - on pasture (Fence). Other treatments included total separation from dams - on pasture (Away); total separation from dams - drylot - preconditioned to hay (Pre-Con); total separation from dams - drylot - not preconditioned to hay (No-Pre); and non-weaned control animals - on pasture (Control). The two drylot groups were included because some producers place weaned calves in pens for a short period to permit closer scrutiny for health problems and to prevent them from going through fences in attempts to rejoin their mothers. The 20 calves assigned to each treatment in each year were divided into two groups of 10 individuals housed in separate pastures or pens.

Starting on the day of weaning in each year, 10 calves in each of the five treatments were intermittently observed over a 5-day period for vocalizations, feeding (grazing or eating hay), walking (pacing along fence) and lying down (a "comfort" behavior). In addition, fenceline calves and cows were monitored for time spent within 10 feet of the fence separating them, and control calves were observed for time spent within 10 feet of their dams. Large numbers were glued to the shoulders of each animal to permit rapid identification of individuals.

Calves were weighed on the day of weaning and every 7 days for 10 weeks. Body weight data collected in 1999 were discarded because more than 85% of the calves contracted infectious keratoconjunctivitis (pinkeye) in at least one eye during the first 9 weeks post-weaning.
The treatments previously described were applied for only the first week after weaning. From day 7 to day 28 post-weaning, calves (from all treatments) were maintained in two groups of 50 animals each on pasture. Thereafter, they were maintained as a single group to day 70. Control calves were weaned (total separation) at eight weeks (56 days).

Summary of Research Results

Behavior - The behavioral data suggests that the psychological distress resulting from abrupt, total separation at weaning is particularly acute for the first three to four days. In most cases, "normal" calf behavior had resumed by the fifth day post-weaning.
For the first two days after weaning, calves in the fenceline treatment spent approximately 60% of their time within 10 feet of the fence separating them from their dams while their mothers averaged 40% of their time within 10 feet of the fence (Figure 1).

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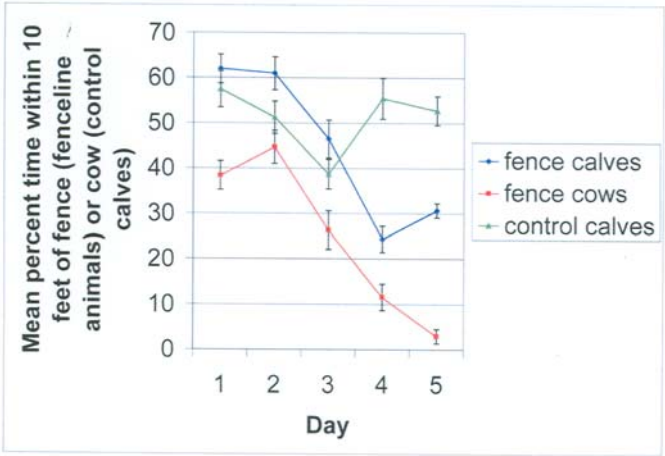

Figure 1 Average percentage of time calves and cows in the fenceline treatment were within 10 feet of the fenceline and percentage of time calves in the unweaned control treatment were within 10 feet of their dams (years combined).

By comparison, unweaned control calves were within 10 feet of their dams about 55% of the time observed. Cows and calves in the fenceline treatment tended to graze away from the fence in groups and then return to the fenceline to stand or lie down, often with cow-calf pairs adjacent to one another (Figure 2).

Figure 2 Typical scene of calves and cows in the fenceline treatment on the day following weaning.

Fenceline calves did not differ from unweaned control calves in time spent feeding in the days following weaning (Figure 3). Calves in the totally-separated treatments fed less. Totally-separated calves on pasture spent more time walking (often pacing the perimeter of their pasture) and less time feeding than calves in the other four treatments during the first three days (Figure 3).

Totally separated calves (all three treatments) spent less time lying down and vocalized at more than twice the rate of the fenceline calves during the period of observation (Figure 4). In general, fenceline calves were intermediate between unweaned control calves and totally separated calves with respect to the behavioral indices of distress exhibited. Maintaining calves under drylot conditions and preconditioning them to hay only had minor effects on behavior.

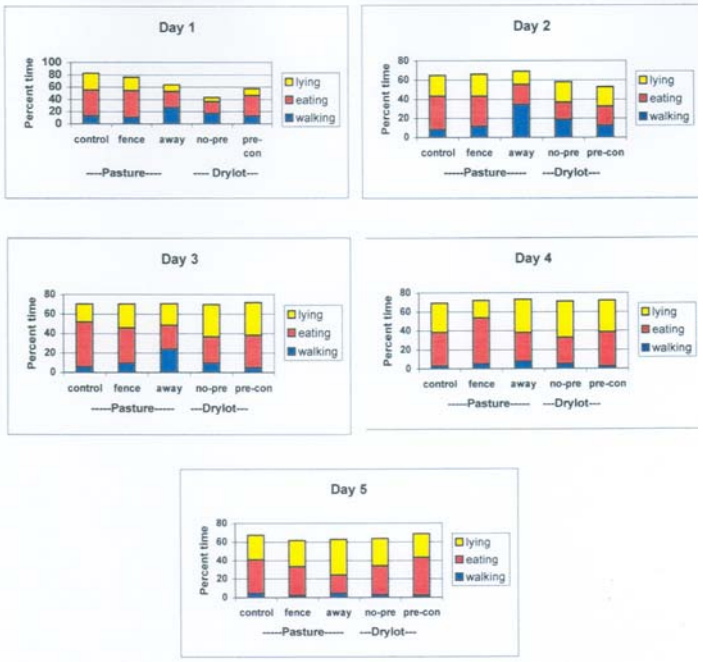

Figure 3 Average percentage of time calves in the five treatments were observed lying down, eating/grazing or walking for the first five days following weaning (years combined).

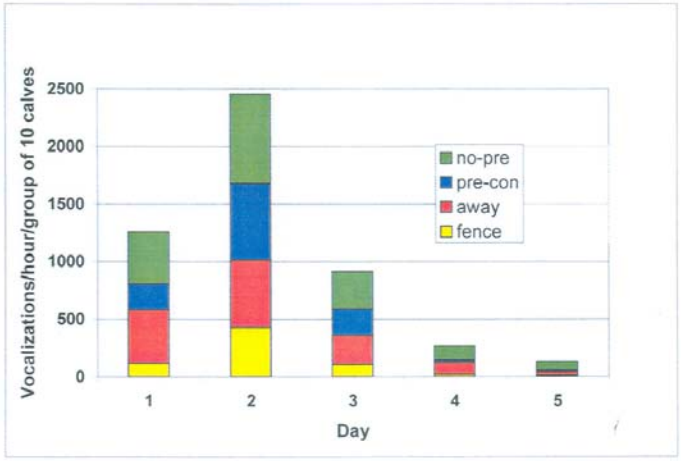

Figure 4 Average total number of vocalizations per hour per group of 10 calves in the four weaned treatments over the five days following weaning (years combined). Control calves did not vocalize.

Body Weight - In the first 2 weeks post-weaning, fenceline calves gained 95% more weight than calves in the three totally-separated treatments (47 vs. 24 lbs; Figure 5). After 10 weeks, fenceline calves had still gained 31% more weight (110 vs. 84 lbs; Figure 6). Post-weaning weight gains of the three totally-separated treatments did not differ at either 2 weeks or 10 weeks. Fenceline calves were 23% lighter than the non-weaned control calves at 10 weeks (110 vs. 143 lbs.; Figure 6). Of course, the control calves had access to their mothers' milk. Preconditioning drylot-weaned calves to hay had little effect on their subsequent weight gain. It appeared

that treatment differences in weight gain were established during the first two weeks following weaning and were relatively persistent throughout the 10-week period of monitoring growth.

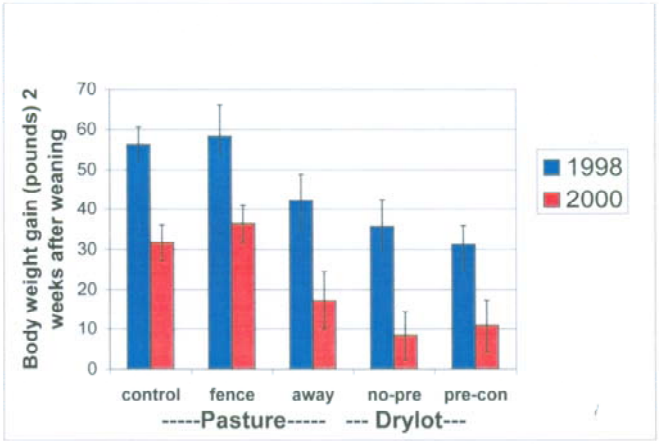

Figure 5 Average weight gain (lbs.) of the calves in the five treatments at two weeks post-weaning.

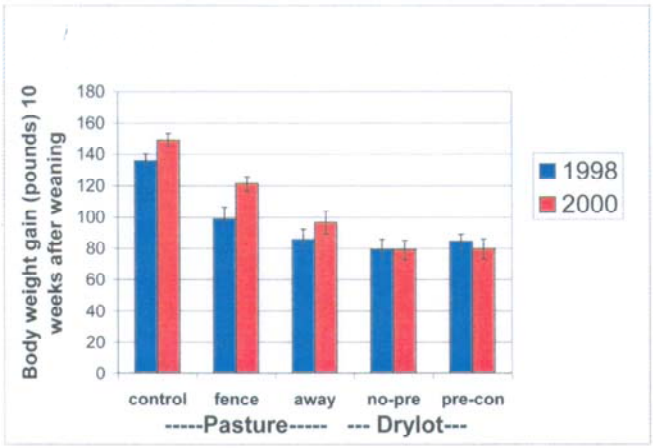

Figure 6 Average weight gain (lbs.) of the calves in the five treatments after 10 weeks.

Interestingly, Dr. Price has information on fenceline weaning in horses and sheep which also points to improved welfare and productivity.

State and Transition Models for California's North Coast Oak-Woodlands

Below is a brief abstract that reports on one of my recent collaborative research projects. The primary objective of this work is to provide land owners and managers good descriptions of the ecological resources and to assess the health of these resources. The production estimations will be very useful for estimating carrying capacity for domestic livestock and wildlife. The state and transition models we'll be developing will help landowners and managers make important decisions with regard to future improvements and maintaining the health of these important natural resources.

University of California Cooperative Extension and USDA Natural Resources Conservation Service are developing ecological site descriptions for the oak-woodlands in Major Land Resource Area 15 which includes California's north and central coasts. Vegetation surveys conducted during the spring and summer of 2004 and 2005 determined woody plant canopy cover and density, and understory cover, production and species composition. Data from these surveys were subjected to cluster analysis to classify vegetation survey data into similar groups.

On the north coast initial clustering was based on understory productivity, and density of blue oak (*Quercus douglasii*), coast live oak (*Q. agrifolia*), black oak (*Q. kelloggii*), valley oak (*Q. lobata*), manzanita (*Arctostaphylos* spp), and poison oak (*Toxicodendron diversiloba*). Dominant species in each cluster were incorporated into vegetation states. State and transition models include dynamics of the long-lived tree and shrub layers in response to fire and vegetation management. Shorter term dynamics of the annual plant dominated understory are also included in the state and transition models. Transition dynamics of the woody plant layer and understory layer are based on survey data, clustering results, scientific literature and expert knowledge.

What's the Best Buy?

A simple method of arriving at the best buy in a feed is to calculate the cost per unit of nutrients. Let's look at an example using different protein supplements. The first supplement is 44% crude protein and is selling at $6.00 per 100 pounds. We'll call this supplement A. The other choice of protein supplement is 35% crude protein and is selling for $5.00 per 100 pounds. We'll call this supplement B.

Question: Which supplement, A or B, is the better buy?

Answer: Divide $6.00 by 44 to get 13.6 cents per pound of crude protein for supplement A. Then divide $5.00 by 35 and get 14.3 cents per pound for supplement B. Thus at these prices supplement A is the better buy -- by 0.7 cents (14.3 - 13.6 = 0.7) per pound of crude protein.

Of course, the other factor in choosing a supplement is how well the animals eat it.

As always if you have questions about articles in this newsletter give me a call or drop me an email.

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