Dairy study examines

The Texas A&M AgriLife Research is trying to help the dairy industry determine how breed and conformation affect dairy cow longevity.

Dr. Pablo Pinedo, Texas AgriLife Research, an animal health scientist in Amarillo, Texas, is conducting a study funded by the American Jersey Cattle Club Research Foundation because producers have noticed a decline in longevity of dairy cows worldwide.

"Today's high involuntary culling rates are a concern on dairy farms from both an animal well-being and an economic point of view," Pinedo said.

While Holstein herds have been predominant in Texas and New Mexico, large cheese processing plants in the northern Texas Panhandle and in eastern New Mexico have prompted the use of Jersey crosses in multi-breed dairy herds in those areas, he said.

In his study, Pinedo said he intends to use Jersey, Holstein and crossbred cattle all under the same conditions in the same operations to provide what he characterized as "a unique opportunity to analyze and compare the dynamic of culling in different breeds."

The objectives of this study are to:

- Describe the dynamics of the culling risk of Jersey cows considering age, stage of lactation, milk yield, reproductive status, herd milk yield and herd size.
- Explore associations between culling dynamics and breed traits such as udder conformation, feet and legs, body depth, etc.
- Identify management-related risk factors, and
- Compare the productive life among Jerseys, Holsteins and their crosses in multi-breed dairy herds in the Texas High Plains region.

The study will analyze lactation records from cows calving since January 2007 to the present from large herds located in the Texas High Plains and eastern New Mexico, Pinedo said.

"We hope our results will help dairy producers implement efficient strategies to manage critical points affecting cow survival," he said. "This information will also provide a precise comparison on the productive life between Jerseys and Holsteins under the same conditions, supporting the decision process regarding the future replacement."

Embryonic survival

William Thatcher, Jose E.P. Santos and Charles R. Staples of the University of Georgia recently published research in the journal Theriogenology that describes dietary manipulations to improve embryonic survival in cattle.

They noted that high-producing dairy cows are subfertile because hormonal and metabolic regulatory responses that partition nutrients for lactation, coupled with management factors, contribute to reduced fertility.

Reproductive management systems partially restore herd reproductive performance and provide a basis to assess the effects of targeted nutrition strategies to further improve postpartum health and reproduction, Thatcher et al. said.

They reported that increasing the number of days of feeding preparum diets that have a negative dietary cation-anion difference, combined with adequate energy, protein, amino acids and trace/macro minerals, improves the subsequent pregnancy rate.

Likewise, they noted that supplementing organic selenium in the transition period and during lactation improves immune function, uterine health and subsequent reproductive performance under conditions of selenium insufficiency.

A basic understanding of the regulatory processes between nutrient partitioning and reproduction has led to the development of dietary strategies that benefit both lactation and reproduction, Thatcher et al. said.

Postpartum increases in dietary nonstructural carbohydrates (i.e., glucogenic diets) increased the ovum activity in either intensive or extensive systems. Furthermore, the sequential feeding of glucogenic-lipogenic diets enhanced the proportion of cows pregnant by 120 days of lactation.

Oxygen barrier film

New research shows that the use of oxygen barrier films protects feedstuffs better than standard plastic coverings, according to an announcement from Silostop.

Experiments to compare the effects of oxygen barrier films on the composition and losses from the upper layers of ensiled crops were carried out by the Estonian Research Institute of Agriculture, the Research Institute of Biotechnology & Veterinary Medicine at Latvia University of Agriculture and the School of Biosciences at the University of Nottingham in conjunction with Silostop.

The researchers built on proven findings that conventional black plastic silage covering can allow up to 400 cu. cm of oxygen per square meter to pass through the film in a 24-hour period. In contrast, silage covered with an oxygen barrier film allowed just 3 cu. cm of oxygen per square meter to pass through the film, the announcement said.

Crops stored in non-airtight conditions are more susceptible to aerobic spoilage and increased wastage. Silostop pointed out, when cattle were housed in airtight conditions remain in visibly better condition and retain a higher nutritional value.

The collaborative study further examined these results by monitoring stored silages in concrete walled bunkers covered with oxygen barrier films and standard plastic coverings. Specifically, the trial found that, after 120 days in storage, wilted crops of mixed grass and red clover ensiled in farm-scale bunker silos suffered dry matter losses of 5% in the whole bunker when stored under conventional plastic covering, compared to 2.5% in the whole bunker for crops stored under an oxygen barrier film, the announcement reported.

Dry matter losses were highest at the top 15.7 cm of the pile; losses for silage covered conventionally tallied up to 12%, compared to a 10% loss for crops stored under the oxygen barrier film.

Increased oxygen infiltration resulted in silage quality deterioration throughout the storage process. The total quantity of silage fresh weight discarded from the top layer of each crop — because it was judged inedible for livestock — was 1.7 tons of the crop under the oxygen barrier film and 100 tons of the crop under the conventional plastic covering (0.1% versus 5.9% of the total 1,700 tons ensiled), the company said.

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