

Cows, Carrots And Heat Stress

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NEWARK, Del. — There's an old saying: "What's good for horses is good for cows, and maybe even humans."

That is one reason oats is a popular feed, although for cows, the price doesn't fit into the least-cost ration formulation.

Carrots is another example. Horses love them and a regular feeding of carrots makes their haircoat glossy. But not too many dairy farmers feed carrots to their cows, not even to their prize cows. Cost and labor in handling small carrots is one reason.

In this country we do not feed cows the bigger root vegetables, such as rutabagas, mangles or cowbeets, as farmers still do in Europe. Instead, we have turned to

the chemical-pharmaceutical industry for cheaper extracts with (we hope)—the same nutritional benefits. Instead of feeding carrots, we add a carotene supplement to the feed ration. However, there are several different carotenes and, we hope, the beta-carotene is the right one.

Actually, carotenes have some unique metabolic properties beyond the empirical benefit of glossy haircoats. These properties are called antioxidant. In research with embryos of cows and mice, it has been found that antioxidants protect them against deleterious effects from the elevated temperatures that are experienced on hot summer days. In new research at the University of Florida (appropriately), this reputation of antioxidants was tested to possibly reduce bovine embryo losses.

Soon we may have Florida-type heat here too, so this research offers interesting possibilities for application. Heat stress generally reduces conception or pregnancy rates in dairy cows. It has been determined that in Florida the average pregnancy rates of 45 percent in winter are drastically reduced to less than 10 percent during the hottest summer months. Also, heat stress reduces the expression and length of estrus behavior, thus fewer cows are detected in estrus. Consequently, fewer cows are bred by artificial insemination than should be, resulting in fewer pregnancies, longer calving intervals and longer lactations with less milk production per day.

To alleviate the bad effects of heat stress, Florida has pioneered

ways to cool cows, such as erecting cloth covers to shade cows in feeding and holding areas and, even more effective, a combination of overhead sprinklers and fans for evaporative cooling. The University of Delaware dairy herd has benefited from these cooling means also, even though our cows are not subjected to that much Florida-like heat. A number of farm magazines have written on this topic at this time, because these methods pay off outside of Florida, too.

However, even with the best cooling systems, studies comparing calving intervals for winter vs. summer breeding in Florida have shown that the intervals are different and still too long for summer breeding.

A new strategy being tested is timed artificial breeding, or timed

A.I. This involves the use of sex hormone injections into cows to induce ovulation at a precise, predictable time a few days later. Thus, there is no more need to worry about observing estrus in cows or missing any.

The precise estrus time after hormone injections means that a greater efficiency in inseminating cows is achievable. At least this is the hypothesis of the new Florida research. The study was conducted at two commercial dairy farms, one in southern and one in northern Florida over a 12-month period with 700 Holstein cows. They had the benefit of overhead sprinkler cooling. Added to their complete ration were 400 milligrams beta-carotene per day for the experimental cows, at least 15 days before breeding. These cows

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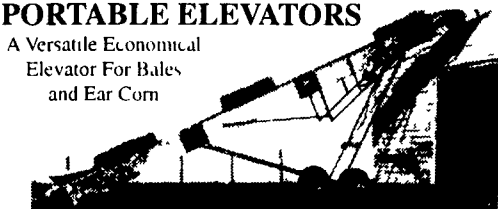
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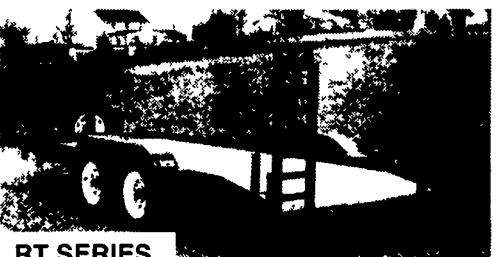
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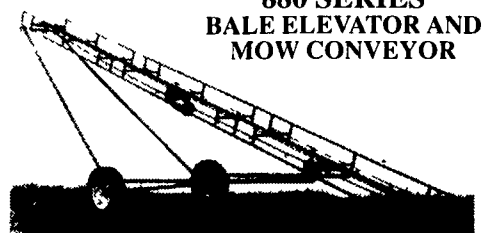


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