

Dairy Excel Column
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Dianne Shoemaker

Show them the light and the milk will come! Or will it? Actually it depends on the cow's stage of lactation. You have heard it before, 16 hours of light and 8 hours of dark for lactating cows generates a nifty 5 to 16% increase in milk production. But what about dry cows? Or pre-fresh heifers?

Fortunately for us, a couple researchers looked at some clues from a study or two with lactating animals and took a closer look at dry cow responses. They expected to find that dry cows exposed to 16 hours of light and 8 hours of dark would increase milk production in the following lactation compared to cows who were exposed to 8 hours of light and 16 hours of dark. In this University of Maryland study, thirty-four cows received one of these light treatments from dry-off to freshening.

Well, so much for Dr. Geoffrey Dahl's hypothesis. Much to the electric company's probable dismay, dry cows exposed to 8 hours of light and 16 hours of dark outproduced the 16 hours of light cows by an average of 6.6 pounds of milk per cow per day through the first 120 days of lactation. Certainly a significant amount of milk. After these dry cows freshened, they were all returned to the existing daylight/nighttime light schedule for their lactation.

Not very often does a management practice come along that costs so little and offers such a generous return. (Shoot, all you have to do is turn out the lights or train the cows to put on those little black eye shades after 6 p.m.!) A previous study by a D.C. Peticleric found the same response in a similar experiment that also looked at using melatonin to simulate a short-day treatment. This is important because one study's results are interesting, but until they have been repeated by someone else somewhere else they are interesting but potentially unreliable. It is a lot like not wanting to use a lot of semen from one particular "hot" bull until the reliability of the estimated proof numbers have been confirmed by cows producing in many different herds.

Another question asked by Dr. Dahl and colleagues concerned the combined effects of day length and use of bST. They found that cows responded with additional milk to bST alone and increased day length alone. They also found that combining the management practices resulted in the combined milk response from each treatment alone. In other words, it will pay a producer to use both management practices.

So, what qualifies as light and what qualifies as dark? If you have security lights outside a barn, does that mess up the "dark" time? How can someone milking 3X get a long enough period of "dark"? The best way to know for sure is to check each area with a light meter. Since they cost between \$100 and \$200, get your neighbor to buy one and borrow his. Light intensity is measured in footcandles. A footcandle equals one lumen per square foot.

Light for the "light" period is defined as at least 20 foot candles. According to Dr. Dahl, light measured at 5 foot-candles or less is considered "dark" by cows. He also suggests that in barns where cows must be moved a distance to milk, low intensity red lights (4W bulbs) can be used to provide enough light for the cows to be moved around. This is a viable option for 3X herds where getting a long enough "dark" period is a challenge. Place the lights approximately 15 feet high and 18 to 27 feet apart. These low intensity lights will not be interpreted by the cow as "light" and will not interfere with their dark period response.

In summary, to maximize the use of light and dark (photoperiod manipulation) to maximize milk production:

- 1) Provide dry cows and heifers 60 days before calving with 8 hours of light and 16 hours of darkness until fresh.
- 2) Provide lactating cows with 16 hours of light and 8 hours of dark. A minimum of 6 hours of dark is needed to stimulate the increased milk production response.
- 3) Light measuring 20 foot candles or more stimulates the "light" response in cows.
- 4) Light measuring 5 foot candles or less is interpreted by cows as "dark".

Mark your calendars for March 1st and plan to join your friends and colleagues at the Northeast Ohio Dairy Management Conference in Canton. Now more than ever, getting your animals off to a good start in each lactation has a major impact on the bottom line. Interesting and knowledgeable speakers will focus on transition cow health, nutrition, management and housing. Additional topics include advantages of variable speed motors for vacuum pumps and milk pumps with plate coolers, an update on environmental rules and regulations, optimizing fan placement in freestall barns and a quick look at costs of production. Call your County Extension Office for registration information or the Northeast District Extension Office at (330) 263-3831. Early registration for \$20 is available until February 21st.