Heat stress is a major problem for dairy operations around the world, yet several strategies for heat abatement are normally used for lactating cows during warmer seasons of the year. Interestingly, it is not very common to find good heat abatement strategies being used in pre-partum pens. In fact, the dry pen (both far-off and close-up pens) is almost always the last one to receive good shade, fans or sprinklers. The dry cow pen should not be forgotten. Consider this, if a dry cow undergoes any level of heat stress during her pre-partum period, her developing oocytes are also affected. Therefore, it is very likely that conception rates at the first post-partum A.I. will increase by decreasing heat stress before calving. In addition to that, recent articles have shown that cooling dry cows can also increase milk production in the new lactation.

A good strategy of heat abatement during pre-partum period in dairy cows is to ensure adequate shade is provided. This can be achieved by using structures like roofs or awnings to provide shade to the cows.

**Picture 1. Getting adequate shade is important for pre-partum cows.** (Picture by: Alex Souza)
cows is beneficial. In this article, we’ll show some of the results from two research articles that described the positive effects of cooling cows during the pre-partum period on milk production and fertility post-partum. In addition, one of these studies also showed an economic analysis of how the cow comfort in the pen during the pre-partum period paid in hard cash returns.

Avendaño-Reyes et al. (2006) studied the effects of cooling Holstein cows during a 60-day dry period on subsequent post-partum performance. They used 52 Holstein cows, housed in pens either cooled with water spray and fans or not cooled. They found that the cooled cows presented lower respiratory rate and rectal temperatures. Consequently, cows in the pens with spray and fans had better performances of milk production over time and fertility as shown in the figures above (Figure 1).

The improvements of fertility by cooling during the pre-partum period are not totally understood yet. But it might be related with the better quality of the oocyte (Roth et al., 2001), and/or to greater feed intakes in the pre-partum (Colazo et al., 2009), which are closely related with improved uterine health in the post-partum (Kuzzey et al., 2007).
The second study was done by Urdaz et al. (2006). They investigated the effects of additional shades and fans to feedbunk-mounted sprinklers on pre-parturient Holstein cows during summer.

The authors used 475 pre-partum multiparous cows divided in two treatments: 1) sprinklers above the feed bunk (n = 236); or 2) sprinklers, shade, and fans over the feed bunk (n = 239). Several variables such as environmental temperature and humidity, body condition scores, and incidence of post-partum diseases (RP, metritis, milk fever, DA) were also collected.

They found no differences in post-partum diseases or changes in body condition scores. However, they described a marked increase in milk production by 60-days milk in the cows that had sprinkler, shade and fan over the feed bunk (Figure 2), which alone, already justified the implementation of the extra shade and fans. In this study they have shown that the addition of shade and fans in the pre-partum period produced extra profits per cow/year of US$8.92.

**Figure 2. Effect of cooling system in the pre-partum period on total milk production within the first 60 days post-partum in Holstein Cows. Adapted from Urdaz et al., 2006.**

**Picture 2. Having plenty of shade is important for pre-partum cows.** (Picture by: Kari Stanek)
Thus, most of the available scientific data seems to suggest that strategies to lower heat stress in the pre-partum and transition periods have favorable effects on the cow’s physiology, milk production, fertility, and ultimately can increase profit margin in dairy operations.

REFERENCES:


