

Getting High Producing Dairy Cows Pregnant

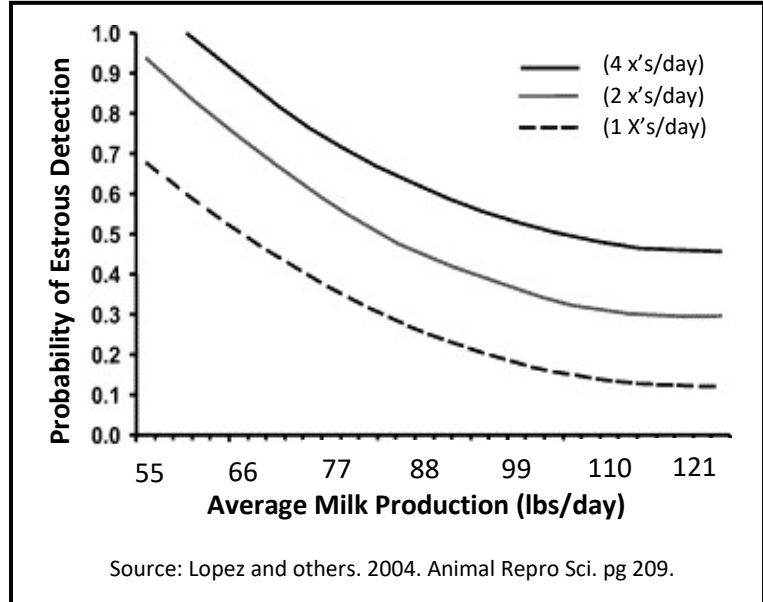


By Donna M. Amaral-Phillips

Getting dairy cows pregnant in a timely manner impacts profitability. No great revelations here. The challenge remains getting this accomplished on farm. High producing dairy cows are in heat for a shorter period of time, thus increasing the challenges in the timely insemination of cows visually detected in heat. To get around this challenge, activity monitor systems have been used as they monitor cows for increased signs of activity throughout the day. Research shows that high producing cows may have differences in hormonal metabolism which must be better understood for the best pregnancy outcomes especially in systems based on heat detection. At a recent national/international American Dairy Science Association meeting, 4 reproductive physiologists covered various aspects related to a discussion centering on whether cows need to be observed in estrus for the best pregnancy outcome. What follows is my assessment of their take home messages.

Production Impacts Duration of Estrus

Higher producing cows have a shortened duration of estrus. Research using an activity monitoring system by Lopez and others showed in cows producing 55 to 66 lbs milk/day, estrus lasted 14.7 hrs. In cows producing 88 to 99 lbs of milk, the duration of estrus decreased to 4.8 hrs and in cows producing over 110 lbs of milk the duration of estrus observed was only 2.8 hrs/day. No differences in estrus behavior were observed between first lactation versus mature cows other than expected differences in milk production. However, more recent studies have shown differences between first lactation and mature cows with first lactation cows being about double in what the researchers termed a “heat Index” which could reflect differences in milk production.



The number of times a day cows are visually observed for signs of heat greatly impacts the probability of detecting cows in heat and this probability is impacted by daily milk production. As shown in figure 1,



the probability of detecting a cow producing 88 lbs of milk in heat is approximately 65% when visually monitoring for estrus 4 times daily (no tail chalk or heat detection aids). This probability of detecting cows in heat drops to 48% when cows are observed twice daily and to 38% when they are observed once daily. If we compare this cow to one producing 110 lbs of milk, the probability of visually detecting that cow in heat with twice daily heat detection drops to 30% versus 48% in the 88 lb milk cow.

Recent studies have shown that the duration of estrus is influenced by the health of the cow within the first 41 days in milk. Cows experiencing metritis or lameness had a shorter duration of estrus. In lame cows, the intensity of heat was greatly reduced (45 vs 11% high activity peak). In addition, an increase in the daughter pregnancy rate index of a cow is correlated with an increased likelihood of a “good heat index” by 41 DIM.

Fertility Programs

Fertility is a function of getting semen into the cow at the correct time, having the needed hormonal milieu (related to amount and timing of estrogen, LH, and progesterone), and a “good” intensity and duration of estrus. Timed AI programs were first developed to get semen into cows earlier since they did not rely on heat detection per se; hopefully resulting in fewer days open. Today, we are learning that these programs can also help increase the fertility of cows over that which can be achieved with heat detection breeding protocols. Studies presented by Dr. Paul Fricke suggested a 10% increase in pregnancies per AI could be achieved with timed AI protocols (G6G or Double Ovsynch) relative to those relying on a form of heat detection. These increases in fertility were seen even after researchers accounted for the genetic differences in fertility. Another bonus may be that cows bred to timed AI have fewer twins and thus lower embryo losses. More needs to be learned so as to tweak the timing of the estrus cycle and the resulting impact on the follicles. This information will allow for a better match of reproductive protocols to reflect the differences that may exist between virgin heifers and mature cows.