

# North By Northwest: New Directions For Better Heat Detection

A. G. Wesselius, DVM  
Centralia, WA 98531

Getting dairy cows pregnant is a difficult problem for most dairy producers. The average dairyman loses \$100 to \$200 per cow per year because of reproductive problems. Reducing the number of missed heats in a herd is one of the most significant challenges that a herd health veterinarian can attempt to achieve when counseling dairymen on reproductive management. Detection of estrus is the most costly factor contributing to reproductive efficiency and economic profitability of the dairy herd.

Various university research reports suggest that the average cost per day open for every day open beyond 90 day postpartum ranges between \$3 to \$5 per day. Herd average days open among most dairies range between 120 and 130 days. With this information, the lost profit resulting from average reproductive management ranges between \$90 per cow on the low end and \$200 per cow on the high end. In a 100 cow dairy, efficient management of heat detection can result in a potential yearly increase in profits between \$9,000 and \$20,000!

Reducing average days open in a 100 cow herd by only five days can result in a considerable feed cost savings. This amount far exceeds the potential expense of a good heat detection program. By simply calculating average cost per day open and multiplying it by a 21 day heat cycle, missed heats after breeding can cost the average dairy producer between \$63 and \$105 monthly.

The heat detection challenge revolves around efficiency and accuracy. Efficiency represents the daily activity of catching and identifying cows in heat. Accuracy represents the ability to make a heat detection diagnosis when cows are truly in heat and ready to be bred. Studies among dairy herds indicate that as many as 50% of the heats are missed in the average herd. The primary reason missed heats are a problem is because visual observation alone fails to achieve optimum heat detection efficiency.

Research has demonstrated that 65% of heats last less than 16 hours and 25% less than 8 hours. Furthermore, 50 - 70% of estrus behavior occurs at night when visually observing cows for heat isn't very practical. Therefore, it is not difficult to understand that these shortened heats, occurring at night or between visual observation periods, are probably the single greatest cause of missed heats.

If the dairy management is breeding cows based on secondary signs of heat (signs other than standing heat), improvement in heat detection accuracy is required. A smeared tailhead on a tailhead painted cow only tells you the cow was mounted. It does not tell you the cow stood to be ridden and was actually in heat. A broken Kamar heat detection pad also can be false positive.

Heat detection efficiency can be increased by combin-

ing heatmount detectors with visual observation. Accuracy of heat detection is determined by the type of the heatmount detection that is employed on the dairy and the type of heatmount detector that an individual feels comfortable in using with standard visual observation. Accuracy has also been improved with the use of progesterone tests to determine if cows are in heat that are selected for breeding. This test also helps evaluate an individual's heat detection efficiency; a cow that was bred that subsequently demonstrated a high progesterone level obviously was not in heat.

Teaser animals have been employed to help augment heat detection, surgically altered intact males or daily testosterone injected androgenized females; however the economical aspects of these heat detectors has not been practical for the average dairy management. Heifers androgenized by implanting with Synovex-H was reported by Mortimer, *et al*, during the 1986 AABP conference. Further research at Colorado State University on this aspect of androgenizing individuals for heat detectors has provided a practical method for selective determination of cows in estrus and mounting activity.

Androgenized steers are utilized in our practice to help increase heat detection efficiency and accuracy. Steers are an available group of cattle on most dairies that can be utilized, in our experience dairymen are reluctant to sacrifice a heifer for this procedure. We have also come to the conclusion that androgenized steers are more aggressive in heat detection activity than either heifers or freemartins that have been implanted.

Steers are androgenized by placing four Synovex-H implants in each ear. After a two week interval the steers can be introduced to the dairy herd to help in the detection of heat. Reimplantation after a period of approximately 90 days can be conducted if heat mounting activity starts to diminish; weight gains usually prevent subsequent implantations. Larger dairies utilize several androgenized steers and rotate them in the breeding strings to take advantage of introducing a new individual to the cows, for better heat mounting activity.

It goes without saying, heat detection devices, including androgenized steers, do not take the place of proper observation of the herd for estrus activity and the use of a good record keeping system. A philosophical dairyman once told me, "Doc, I may not know much but I do know one thing for certain; you can not catch the cows in heat if you're not home."

The discovery of prostaglandins in the early 1970's has changed bovine reproductive management more than any other drug in the last 25 years. Prostaglandin F<sub>2</sub> alpha

(PGF<sub>2</sub> alpha) is the most important prostaglandin we use for manipulation of the bovine cycle in our herd health programs. Synchronizing estrus of individual cows that have a corpus luteum and have not been detected in heat is an effective way to maximize a dairy herd's reproductive efficiency. Synchronizing estrus in groups of cows and heifers is an effective way to help control herd distribution for profitable production. As with any veterinary intervention with the reproduction management of cattle, there are some considerations to be made before medical administration. Nutrition and body score conditions are important aspects of the dairy management that must be reviewed if synchronization programs are to be effective. Also timing of synchronization must be reviewed with the management before it is implemented. Injecting a group of cattle with PGF<sub>2</sub> alpha 48 hours before the Super Bowl or Christmas will have mixed results.

A considerable volume of data has been collected concerning the effects of PGF<sub>2</sub> alpha on reproductive efficiency, but the theoretical and practical value of using this medication in postpartum cows is still being debated. A good review of the literature on this subject was presented in the June 1991 issue of *Veterinary Medicine*. In our practice, clinical impressions indicate that PGF<sub>2</sub> alpha used during the postpartum period can reduce the interval to first service. Obtaining uterine involution and ovarian activity before breeding commences has an important impact on profitability by decreasing days open in the herd.

Additional research is required to clarify the value of PFG<sub>2</sub> alpha in treating metritis in the noncyclic cow. However, the value of this medication during this stage of lactation may be that it has the least deleterious impact on reproductive efficiency compared with conventional treatment regimen, intrauterine infusions. The economic advantage of prostaglandin therapy over antibiotic therapy is that milk from cows treated with PGF<sub>2</sub> alpha does not have to be withheld from the bulk tank, whereas milk from cows treated with intrauterine antibiotic infusions must be withheld until the antibiotic is cleared. A clinical impression

worth further investigation is the report by dairymen that postpartum metritis cows treated with prostaglandin do not go off feed and lose production compared to cows treated with antibiotics alone.

Prostaglandin is the best agent for treatment of uterine infection in cows with a corpus luteum because it stimulates contraction of the uterine muscles and empties pus and fluids from the uterus. Heat prediction can also be extrapolated from the treatment intervention for future breeding in the reproductive cycle. Using PGF<sub>2</sub> alpha on a whole herd basis for postpartum cows needs to be evaluated after close investigation of the health status and management practices of the dairy under consideration. Such intervention is usually considered successful when there is an indication of an increased incidence of postpartum metritis in the herd and the first-service conception rate and number of days open need improvement.

Another advantage of whole herd postpartum prostaglandin treatment is in the commercial dairy herd that utilizes bulls for breeding. PGF<sub>2</sub> alpha treatment at days 40 to 45 postpartum not only helps control the incidence of endometritis infections but will establish proper lactation intervals. Early conceptions that have occurred in the herds with bulls are aborted and days in milk are not sacrificed due to early breedings. Again this intervention can also be used to manipulate herd distribution and heat detection. Careful planning of this medical intervention can be very useful in determining when heats will occur so that bulls are not over used and heat records can be obtained.

In conclusion, heat detection in the northwest is really nothing new or different from procedures conducted in other areas. Close observation and persistent dedication by management is required in order to get results. Veterinary intervention can be an aid for better efficiency and accuracy in estrus detection if it is combined with other aspects of a good herd health program. In no way allow your recommendations to become a "crutch" for sound management procedures if you expect to anticipate profitable results for the dairyman.

## Heifer Co-op: Broader Veterinary Services for Smaller Beef Producers

**W. Mark Hilton, DVM**  
*DeWitt Veterinary Clinic*  
 DeWitt, IA 52742

In our area of the country (Eastern Iowa) we have many family farms that include beef cows as one of their many farming enterprises. Many of these producers find it difficult to justify saving back replacement heifers due to a variety of reasons, namely:

1. One breeding pasture used.
2. Only one bull used on the entire cow herd.

3. Calving problems with heifers.
4. Replacement heifers are sired by current herd bull.
5. Too few heifers to successfully heat detect and A.I.
6. Unable to identify top replacements due to a lack of records.
7. Poor facilities to make A.I. practical.

So, many of these producers end up buying bred cows to