



# Holstein INTERNATIONAL

- **Global update: How relevant is crossbreeding?**
- **Technical aids for heat detection**
- **Bolton, Willsbro & the Global Cow of the Year**



# The unstoppable advance of

Dairy farmer Johannes Loubser was very enthusiastic about his heat detection system in HI's reproduction series (HI 05/2010). The South African is not alone. Around the world, thousands of farmers trust their "assistant", who for 24 hours a day, seven days a week, tirelessly signals which cows are in heat. Three specialists and farmers from Europe, Israel and the U.S. share their experiences.

**I**n 2006 at the German agricultural exhibition EuroTier, I met representatives of the Danish company Mosegarden. They put me in touch with Dansire. This Danish AI company, which later became part of VikingGenetics, experienced increasing competition from herd bulls because, due to expansion, farmers were not able to adequately heat detect their young stock anymore. After a trial in a heifer barn, Dansire decided to include "Heatime" in their sales package. There are now 700 of these systems functioning in Denmark.' This is the report of Obe Altenburg, export sales manager for the Italian company Milkline. 'When I was hired six years ago, the heat detection system Heatime

was part of the total sales package. In Italy there were a number of systems up and running already. Sales via existing dealers progressed slowly, despite the fact that customers who used Heatime were very enthusiastic about it. Since contacting Viking, I have also experienced success in approaching other breeding companies. AI's that sell Heatime really appreciate, first of all, just how user-friendly they are. Farmers can easily install Heatime themselves and the operation is simple and easily accessible to AI technicians. A computer is not required.' Neckband transponders on the left side of the neck measure movements that are specific to a heat. Twice daily, corrected information that

has been averaged over two hours is received by the antenna and subsequently sent to the Heatime control panel. After that the newest data is compared with the cow-specific average of the previous seven days. A red light informs the farmer when a cow is in heat and indicates the cow number on the display. 'Its use in the field proves its great value. In a healthy herd, Heatime has an accuracy of 95%,' according to Altenburg.

## ISRAEL

Alon Arazi is Head of the Applied Research Team of the Israeli company Afimilk. Worldwide, about half a million cows wear their Afi-Act pedometer. 'The first fully computerized heat detection systems were introduced to the market in 1985. Today, in Israel approximately 85% of the cows are monitored by heat detection systems. About 80% of these are with AfiMilk pedometers. In general, Israeli agriculture is highly technological because we try to have modern agriculture with high performance in a desert climate. Hand in hand with the Israeli dairy industry's growth, new



Adequate heat detection is essential to good fertility results.



# Heat detection systems

## Reproduction

high-level technology was developed in Israel by people who are both close to the dairy industry and who have a technological mind. This combination leads to the development of sensors that provide solutions for the farmer's needs. In addition, the size of Israeli farms and the high cost of labour, encourage farmers to adopt solutions which decrease labour and cost.' About the specific operation of the heat detection system AfiAct, Arazi says: 'The AfiMilk system in general, and the AfiAct specifically, is part of a complete system which includes both the high quality sensors and the management software, which has high analysis performance, based on years of research and experience in the field. The qualities and advantages of our systems are based on two main issues. Firstly, they have been developed by people who are from dairy farms, and focus on giving solutions for the farmer's needs

### SUCCESSFUL TRIAL

Jon Lundgren of Prairie du Sac, Wisconsin, milks 440 cows. 'Over the years I have seen fertility results steadily decrease. That is one of the reasons why I milk 33% crossbreds. The Jersey and Montbeliarde crossbreds are pregnant a month earlier than the Holsteins. In early 2010 I received an offer to test Select Detect. Before that I made use of hormonal synchronization in combination with tail chalking across the board. Especially the Jersey crossbreds had a disadvantage because they licked off the chalk, so I ended up missing heats. On top of that, I'm not a proponent of hormone treatments.' The trial ran from January through June. The herd was randomly divided into a trial and a reference group. Lundgren: 'I noticed the improvement right away and would have preferred to have the entire herd managed by the heat detection system as soon as possible. Now every week I save 45 hormone injections at \$3 apiece. This alone covers the investment. All of the other savings provide additional income.' The extent to which fertility results have improved, Lundgren cannot exactly say. 'It surprises me that during the extremely warm summer months cows became pregnant at all. Fact is that the detection system identifies more heats than what I noticed myself with synchronization combined with tail chalking.'

and problems. Secondly, it is a full system which analyzes and supports decisions and gives the farmer a complete picture of the herd and area of interest: For reproduction as an example, the system is not only an oestrus detection tool, but it also analyzes the reproduction status of the herd, and groups in the herd, and helps the breeder to find and improve the weak points in the farm. It is important to remember that fertility is closely connected to and influenced by cow health, cow welfare, milk production, etc. So to get the best results the system must work in a multi-faceted approach.'

### HISTORY

In the spring of 2009, HI published an extensive interview with the American Dr. Ray Nebel (HI 01/2009). The senior reproduction specialist at Select Sires made no mention of heat detection systems at the time. Select Sires recently introduced the heat detection system Select Detect. 'Select Sires desire is to be proactive having a solution for herds that do not want to maintain a synchronization program where cows receive 3 to 5 hormone injections prior to insemination. I have been evaluating various activity systems for at least three years and we had a single trial herd that installed the Dairymaster MooMonitor system in early October 2009. Late 2008 I had very limited data and was in no position to comment either positively or negatively,' explains Nebel. The former "Professor of Reproductive Physiology" in the "Dairy Science" department at Virginia Tech University provides an historical overview. 'In the 80's, herds started getting larger with more confinement housing, which reduced the time dedicated to visual inspection for signs of oestrus. Various heat detection aids were introduced from Kamar pressure patches to the electronic system HeatWatch®. In the mid-90's, Ovsynch was introduced and for the last 15 years synchronization protocol have evolved from Ovsynch to Double Ovsynch, which requires 6 hormone injections prior to insemination. Pedometer systems were developed such as AFI™ from Israel, and similar systems with almost every milking system available. However, milking equipment companies generally do a poor job consulting with dairy producers on reproduction on where and how these systems fit into a reproduction program. This brings us up to the last 10 years when DeLaval developed ALPRO™ and systems such as Heatime™ and MooMonitor™ became available.'

### THINGS WORTH KNOWING

Next Nebel mentions a few remarkable things worth knowing. 'When I was at VA Tech, in 1998 we published in the Journal of Dairy Science the results from 2667 breedings with the HeatWatch® system from 18 different herds of various sizes and management styles designed to evaluate the optimum time for insemination if we knew when the first mount of oestrus occurred. This study revealed many interesting results that help explain why we observe on average only 50 to 66% of the heats. One, the average heat is only 7.2 hours from first mount to last mount. Two, the average cow is mounted only 7 times during her heat period. Three, 24% of the heats were less than 7 hours in duration with an intensity of less than 1.5 mounts per hour. And four, the onset of heat was equally distributed during the 24 hours of the day, so just as many cows came in heat from 6 pm to midnight as between 6 am and noon.'

### ESSENTIAL TECHNIQUES

Nebel underscores the value of heat detection systems. 'Activity Systems such as Select Detect can be a real game changer for many dairy operations as it will save labour, reduce operating cost and the reliance on synchronization programs. Increased heat detection rates are the real advantage but we have also seen an average of a 6-percentage point increase in conception. However, not all herds experience an increase in conception. If poor semen handling, lack of energy in the ration, or poor transition is the causative factor for lower than desired conception, a heat detection system does not and cannot fix these types of challenges. There is still a need for synchronizing, but only 10 to 30% will require 1st service synchronization in contrast to 100%.'

Aron Arazi of Afimilk concludes: 'I think that the automatic oestrus detection systems are the most important innovation in the field of dairy cow reproduction up till now. Nevertheless, it is very important to remember that management systems, including automatic oestrus detection systems, can support and improve reproduction and management decisions and could make good farmers even better, but they could never replace the farmer and could not replace good management and husbandry practice. The first step is to manage your farm and cows properly and then use the pedometer system to get the highest reproduction results on your farm.' ●