The 2011 DCRC Annual Meeting will include a unique technology session highlighting the industry’s advancements in activity monitoring systems and their benefit to dairy cattle reproduction. Select Sires, Afimilk and SCR Precise Dairy Farming will each showcase their activity monitoring systems and how producers can benefit from their implementation. To highlight the innovative session, we have compiled the following responses in a roundtable format to learn more about activity monitoring systems.

**SELECT SIRES INC.**

a federation of 10 farmer-owned-and-controlled cooperatives located in Plain City, Ohio, was founded in 1965 and is the largest artificial insemination (A.I.) company in North America. With approximately 800 employees, the company provides highly fertile semen and excellent services and programs to supply breeders with quality genetics at reasonable prices.

**AFIMILK**

founded in Afikim, Israel, in 1977 as S.A.E. Afikim, has become a global leader in developing, manufacturing and marketing advanced computerized automation and herd management solutions for the modern dairy farm. Afimilk introduced the world’s first electronic milk meter more than 30 years ago and continues to provide advanced solutions for the milking parlor. S.A.E. Afikim’s technology systems and products have been installed and used in over 50 countries and five continents.

**SCR ENGINEERS LTD.**

located in Netanya, Israel, was established in 1976, and today stands as a world leader in advanced computerized solutions for milking control and management solutions for dairy herd management. As a leader in the manufacturing of electronic milk meters, SCR™ currently has over 250,000 units installed throughout the world. Approximately 8,000 farms are currently using over one million of SCR’s Smart-Tag™ animal monitoring solution devices. Micro Dairy Logic and Semex market SCR’s system in the United States.

**TELL US A LITTLE ABOUT YOUR ACTIVITY MONITORING SYSTEM.**

**Select Sires:** Select Detect™ was developed by Dairymaster, a world-leading dairy equipment manufacturer located in Ireland. The system uses an accelerometer—a device used most recently in products like iPod® and iPad®—to measure activity. Outside of North America, Select Detect is marketed as Moo Monitor.

Select Detect uses neck-mounted monitors to collect cow activity data. Periodically, the recorded data is downloaded wirelessly to a base station within an approximate 300-foot radius of the cow. Running on the farm’s computer, the software downloads the activity through a hardwire or wireless connection. The dairy operation can then use the activity analysis program to examine cow activity and assist in heat detection.
Afimilk: AfiAct offers automated heat detection as part of the AfiMilk system for milking parlor data management, production monitoring and fertility management. AfiAct is available as a system-based program or a modular, stand-alone system. Our system collects data from a pedometer attached to the cow's leg. AfiAct estrous detection and fertility management can be used for heifers and milking cows.

SCR: The SCR™ Heatime® Smart Tag™ technology is based in a neck mounted transponder that monitors and records cow activity levels using a proprietary three-dimensional accelerometer and advanced data analysis algorithms.

SCR’s latest product, the HR-Tag™, which will be launched in the U.S. in October 2011, incorporates the activity monitoring platform along a microphone that “listens” and times the cow’s rumination activity.

The activity monitoring platform has been proven to provide exceptional heat detection accuracy by independent research and thousands of users worldwide, the additional rumination monitoring serves to validate heat detection in cows displaying borderline estrus activity.

Smart Tag technology, which has been adopted by the leading milking equipment manufacturers and thousands of farmers, affects millions of cows worldwide on a daily basis.

**HOW LONG HAVE YOU OFFERED THE ACTIVITY MONITORING SYSTEM?**

**Select Sires:** The first Select Detect™ system in the U.S. was installed in October 2009. In the spring of 2010, we conducted a large field trial with 21 systems which were installed in 19 states with two objectives:

1. Determine if there was an optimum time of insemination
2. Define our strengths and challenges with the system on U.S. dairies

In October 2010, official marketing of Select Detect began in North America. Currently there are systems in 22 states and four Canadian provinces.

**Afimilk:** Afimilk was the first commercial system to utilize a pedometer for estrous detection, and for more than 25 years the AfiAct system has been available to dairy operations.

**SCR:** More than 10 years ago SCR began manufacturing neck mounted activity monitoring collars. In 2005 a major breakthrough led to the development of a unique optical three-dimensional accelerometer which enables detailed movement analysis. With this development SCR was able to launch Heatime, the heat detection platform to which the HR-Tag belongs. In 2007 rumination monitoring functionality was added to the Heatime platform.
WHY DID YOU FIRST BECOME INTERESTED IN THIS TECHNOLOGY?

Select Sires: Our mission is to enhance the productivity and profitability of livestock producers. At Select Sires we are committed to being the premier provider of highly fertile, superior genetics accompanied by effective reproductive and herd management products and services.

Afimilk: Afimilk’s initial goal was to collect data automatically and use it to assist the dairy operations, with minimal dependency on the farm manager or employees. The strong correlation between herd fertility and farm profitability made heat detection one of the first and most important objectives of the Afimilk system.

SCR: ‘Throughout its history SCR™ has developed unique technologies focused on enhancing cow welfare, operational efficiency and improved profitability. Accurate and efficient heat detection falls in line with these objectives due to its profound and immediate impact on farmers’ bottom line. The development of rumination monitoring capabilities to the transponder took place in 2007, due to our interest in expanding the functionality of the tag to areas beyond reproduction management.

WHAT BENEFITS DOES YOUR SYSTEM OFFER TO DAIRY PRODUCERS IN RELATION TO HERD REPRODUCTION?

Select Sires: First and foremost, Select Detect™ offers a highly accurate and effective method to identify cows in heat. Using this technology, herds have consistently achieved heat detection rates of about 80 percent, up from the U.S. national average of 50 percent. Additionally, due to the system identifying open cows after breeding but before a pregnancy exam, our herds have experienced 70 to 95 percent palpation pregnancy rates, with most in the 80 to 90 percent range. As Select Detect allows for better timing of insemination, we have seen a 5 to 8 percentage point increase in conception rate.

Afimilk: The system provides a complete solution for herd reproduction that includes:

- Estrous detection during the entire reproductive life of the cow. AfTag can be fit on a virgin heifer, with no need to be replaced before the mature cow will leave the herd.
- High estrous detection performance—90% accuracy and efficiency rates under commercial farm conditions
- Accurate and clear alerts of cows suspected of abortions
- Detection of any cow or heifer that should be checked by the veterinarian for fertility disorders, including ovarian cysts or anestrus
- Newly released technology that offers additional information from the same tags. This includes rest behavior of the cows and improves the sensitivity and accuracy of the system.
- Summary reports, including statistical performance analysis for analyzing specific fertility management problems
- Accurate operation under any rearing conditions
SCR: The most notable benefit of the SCR™ system is its ability to offer “peace of mind”—knowing that cows in heat will be identified by the system with a high degree of accuracy. Likewise, the system also alerts the producer if the cow does not cycle, enabling early diagnosis and prompt treatment. Additionally, the system also provides greater confidence that cows are bred at the correct time.

WHAT INFORMATION FROM THE ACTIVITY MONITORING SYSTEM CAN BE USED TO FURTHER A DAIRY’S REPRODUCTIVE PROGRAM?

Select Sires: Select Detect™ offers a variety of opportunities to positively impact a dairy’s reproductive program. At Select Sires, we have coined the term “precision reproductive management,” as the system identifies cycling cows, anestrous cows, lame cows and cystic cows. As we continue research and development of Select Detect, low activity is another feature that we are still researching. Using the system we have been able to identify cows with clinical mastitis and other health disorders that reduce the normal activity level.

Afimilk: AfiAct provides a wide range of statistical analysis and reproduction performance information. Through this comes the ability to monitor the reproduction program and compare the current status with previous periods and trends. The system provides clear data of all common reproductive parameters, including pregnancy rate, conception rate, heat detection, days open, cycle distribution, average days in milk and calving interval. The data collected can be analyzed and presented for any group or sub-population in the herd, allowing inadequate performance to be identified and effort to be focused on key goals. Additionally, rest behavior can be used as an indicator of unfavorable conditions such as heat stress, bedding conditions and high incidence of lameness which can negatively impact estrous expression.

SCR: Heatime® can produce objective data that brings light to metabolic and fresh cow issues. By providing this type of information, producers can be assisted in their decisions as they deal with practices to improve herd nutrition, management and health.

WHAT CHALLENGES MIGHT A PRODUCER FACE WHEN USING THE TECHNOLOGY ON THEIR OPERATION? HOW DOES YOUR COMPANY HELP THEM OVERCOME THESE CHALLENGES?

Select Sires: Select Detect is unique and allows us to determine the relative activity level of the herd and adjust the threshold for each particular dairy to accurately increase estrous detection rates. For example, a few dairies have extremely low levels of activity and the system has allowed us to modify the settings to still accurately identify cows in estrus below threshold activity.

Select Detect sets a baseline of activity for a particular cow, determining her normal activity level or baseline, then compares her activity to particular groups. This ensures older cows are not compared to younger, more active herdmates. Additional activities—pen moves, lameness and cystic ovaries—can cause a cow to appear on the “high activity” list, when not in estrus. We work with producers to incorporate timed A.I. programs to avoid incorrect breeding.
Afimilk: A common challenge we see is changing the producer’s mindset. We have learned that it takes time for producers to trust the automated system, but as their trust develops, they become very reliant on the technology. Over the past decade we have been involved with many academic studies and, with no exceptions, the trial results have shown the superiority of the pedometer estrous detection over other methods of fertility management.

SCR: When using our activity monitoring system, one of the biggest challenges the dairy producer could face is the adoption and management of a different breeding program. To aid with this challenge, the system is backed by a team of specially trained technical experts as well as bovine reproduction specialists to ensure optimal system implementation and long-term use.

WHAT ADVICE DO YOU HAVE FOR PRODUCERS LOOKING TO IMPLEMENT THIS METHOD OF HEAT DETECTION ON THEIR OPERATION?

Select Sires: Activity monitoring still requires cow sense. The pattern of activity is also important, not just the intensity of activity when a cow exceeds a predetermined activity threshold. Some cows will never exceed the threshold, but many times there will be a subtle change in activity that should prompt the dairy team to observe her for other signs of heat and determine if she should be bred. This is the reason a heat expectancy list is generated so the activity of cows and heifers can be quickly reviewed to identify an individual that may not trigger the threshold level and appear on the high activity list.

The system should be looked at as a true investment for better reproductive performance with less labor and less use of synchronization protocols. The initial investment should be evaluated against the long-term return on investment.

Afimilk: Keep it Simple. The AfiAct system is straightforward and it will do the work for you. It is important to remember that systems cannot replace proper management, which remains a key piece of reproduction. Include quality feed in your rations, keep the stalls clean and dry, and pay attention to cow health. Herd management systems can help you become a good herdsman.

SCR: Listen to the trust many thousands of producers have given Heatime® worldwide. Based on their experiences with millions of cows, the implementation of this system is a sensible way to breed your cows!