

# Precision Dairy Meeting Provides New Insight into Technology Use



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Dairy farms are highly technical businesses, and the extent to which that is true was apparent at the 2013 Precision Dairy Conference that took place in Rochester, Minnesota, June 25<sup>th</sup>-27<sup>th</sup>. Over 500 people from around the world were in attendance, with technology manufacturers, researchers, and specialists being among the main conference constituents. Presentations, talks, exhibits, and tours included information on the most recent developments within research and development of precision dairy technologies. Highlights of information presented from the most recent research follows.

## **Lameness Detection**

Another Israeli study focused on development of a lameness detection technology through a model using posture, movement, cow activity, rumination, and milk production using 1,100 Holstein cows equipped with technologies. Cow gait was monitored with a depth image camera and were compared to daytime visual scores. Scores based on posture and movements were used in logistic regression models. A model that used all four scores, and introduced the behavioral and production measurements from the other sensors proved to be beneficial. When used in a model to predict lameness, behavioral loggers, production loggers, and imaging cameras were useful in predicting lameness in cows.

## **Body Condition Scoring**

A third study in Israel was designed to create an automatic body condition score (BCS) monitoring technology. Images viewing the tops of 151 dairy cows were collected to automatically calculate BCS from several contour points on the cow bodies. The scores calculated from the computer were compared to manual scores assigned by researchers. The results suggest that it is possible to automatically calculate BCS from camera images and this technology could have the potential for commercial farm implementation. Many previous studies have shown the value of assigning body condition scores and this technology could remove the potentially laborious task of assigning these scores.

## **Implementation of Activity Systems**

A presentation by Dr. Ray Nebel outlined some of the current commonalities, differences, and trends in relation to activity and health-based precision technologies. Implementation of these technologies has increased in the past few years. This trend is attributable to advances in technology and the increasingly affordable nature of activity monitors. Activity-based technologies have many differences, but all have similar components to their systems. Each technology includes the individual cow sensors, the hardware receiver to collect data from the sensors, and the computer software. Where these technologies differ is in the algorithms generating data. Many of the variables differ, and how technologies arrive at their final user

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reports can be very different. The producer should take into account how technologies monitor activity. Additionally, some technologies have differing levels of accuracy and numbers of false-positives, which should also be taken into consideration by dairy producers.

Producers investing in activity monitors will experience different levels of return on their investment. It is important that producers consider working closely with a reproductive technology expert to help them manage the system and utilize the technology to its fullest potential. According to Dr. Nebel, “common results of implementing an activity system into the reproductive management program are reduced calving intervals, increased estrus detection and conception rates, increased palpation pregnancy rates, and a reduced reliance on timed A.I. protocols”. Dr. Nebel also claims that this is done while also reducing the number of injections used in timed A.I. protocols. In closing, it seems that if used properly, activity-monitoring technologies will allow producers to become more efficient in their reproductive programs. This will cause an increase in profitability by decreasing the number of reproductive based culls made on the farm.