

TECHNOLOGY TOOLS

By Rob Lynch

Tech Savvy Cattle

New technologies in the dairy industry are creating exciting opportunities for farm managers, especially in the area of cow and calf management. We can tour some of these technologies by following the life of a heifer.

We first find our calf as she heads to the milk replacer station where a diet specific to her needs is delivered when her ID is scanned. Our calf can essentially eat whenever she wants and the computerized feeder constantly monitors her feeding behavior. The manager will be alerted of a change in the calf's eating pattern, which might be an early sign of illness. The digital scale she steps on as she heads to the next pen allows calculation of rate of gain by the office computer. Our calf's genomic predictions automatically flow into her record in the farm's management software. This data can help inform decisions on her future in the herd.

Fast forward a couple years and we find our heifer ready to calve. The camera in the maternity pen provides real time video streaming to an iPad perched on a table in the office. We will know as soon as she starts to calve and can monitor her progress without disturbing her.

Now that she's officially started her new lactation, we find her resting comfortably in her stall as the robotic automatic feed pusher passes to ensure constant easy access to TMR. Curtains, cooling fans, and soaking systems operate automatically to keep her comfortable, as the temperature and humidity are constantly monitored in the barn.

Real time progress reports are delivered to the fresh cow manager's smart phone. Milk production data from the parlor can quickly alert the team should her performance start to deviate downward. We can compare that information to data coming in from her rumination and activity monitoring sensors to find possible health problems sooner than

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we could have otherwise. Dr. Matias Strangeferro and Dr. Julio Giordano, Cornell University, compared the performance of an automated health monitoring system (AHMS) that combines rumination time and physical activity to clinical diagnosis by farm personnel. They found that rumination monitors are most effective at identifying cows with metabolic and digestive disorders. Activity monitors identified cows with ketosis 1.5 days earlier and DA's three days earlier than clinical diagnosis. Sensitivity to identify cows

with metritis and mastitis was lower and could be explained by less severe systemic illness. Cows with displaced abomasum (DA), ketosis, metritis and mastitis were identified earlier by the monitoring system than by farm personnel.

If our cow falls behind on her energy balance, the fresh cow team can diagnose her subclinical ketosis as part of a screening program using one of the available cow-side BHB digital blood tests. Finding and correcting her health issues sooner helps to keep our cow in the herd.

The manager can evaluate our cow's activity report to accurately time when she should be inseminated. At herd check, passing a wand over her RFID ear tag transmits the details of her reproductive status to a handheld device. An ultrasound exam lets us know if she would benefit from a protocol that will improve her fertility.

Because this cow is on track to significantly contribute to the farm's profitability, we can increase the likelihood that she delivers a heifer next time by using gender enhanced semen.

Technology advances can make labor more efficient and improve cow health and performance. Perhaps some of these tools won't fit with your dairy, but thoroughly evaluating new technology as it becomes available is exciting. □

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