Welfare advantages differ among robotic milking environments

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AT A GLANCE

Not all robotic milking systems are created equal as some particular systems offer more welfare benefits than others.

For many years, it has been my passion to more fully understand and manage robotic milking systems. I have spent countless hours watching animal videos and staring at the computer screen looking at the data robotic systems provide. It has been close to an addiction.

The videos and data offer a new and interesting view into animal behavior that was not available to us in the past. They provide us with a greater understanding of the dairy cow and give us insight into management practices that take better advantage of her natural habits and instincts. Through my business, I have been blessed with being able to work with robotic, conventional milking parlor and tiestall dairies. From this experience, I have come to recognize the differences, advantages and disadvantages of each of the systems.

Not all robotic milking systems are created equal, and not all robotic milking systems provide the advantages described below. For the purpose of this article, I will use the term IBAMS (individual box automated milking systems) to represent those robotic milking systems that deliver the true advantages of a robotic milking environment.

Modern robotic milking facilities, when properly configured, offer some unique advantages for not only the producer but for the dairy cow itself. Most robotic systems collect over 100 different points of information on each animal every time it enters the milking station. Managers can use this information to monitor the daily status of each animal. Among other things, data from IBAMS shows an increase in longevity resulting from fewer foot and leg problems, better herd and udder health, increased breeding efficiency, less herdmate social pressure and improved milk quality under comparable management expertise.

Recognizing what leads to these advantages requires an understanding of robotic systems and how those systems operate. Robotic milking systems offer better udder health through consistent unvaried milking procedures. Easily retrieved cow status and health reports provided by the robotic system help improve milk quality, breeding efficiency and earlier recognition of health problems including mastitis. Social stress is greatly reduced and fewer foot and leg problems are caused by not ushering cows to be milked or subjecting them to long times in holding areas. Robotic milking systems offer an advantageous cow time budget, which includes all those things the cow does in any 24-hour period, such as eating, drinking, resting, ruminating, walking and being milked.

When it comes to robotic milking systems, there are two main types of traffic flow for freestall dairy facilities – guided and free-flow. With guided traffic, the system operates much like a conventional milking parlor, where the cow is guided from an eating and resting area to a holding area before it enters the milking area with a varying number of milking stations. In some instances, workers guide the cow to this type of parlor. Robotic equipment will then prepare and milk the cow, as well as apply post-milking treatments. The process is usually repeated at least twice, but more often three times a day. Because cow time and social pressure in the holding area is little changed from that of the conventional parlor, the opportunity for the greater cow benefits in the form of fewer foot and leg problems, reduced stress and even greater breeding efficiency is lost.

There are variations of the guided system. One variation is, after training, the cow makes the choice to head to the robotic milker and is guided by a computer-controlled gating system, as opposed to being moved by people. Based on the time interval since the last successful milking, the cow is routed to the robotic milker, feed or resting area. These systems offer some advantages over human-guided systems in that cows are not pushed and holding areas are generally smaller, resulting in fewer opportunities for injury and less holding area time and social pressure.

The second type of robotic milking system is designed as free-flow. These systems provide more cow health advantages than any other system currently being used. There is minimal human intervention, and gates at the entrance and exit of the robotic milker are there only to individualize the milking process for the cow. The cow eats, rests and is milked on her schedule. Unproductive standing time is reduced, and eating, drinking and resting time is maximized. Social pressure is also greatly reduced. Similar to other automated systems, cow status and health information

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are automatically collected, which leads to better breeding efficiency and earlier recognition of possible health problems.

Foot and leg injuries are a fact of life in dairy farming. Moving cows, especially in groups, can increase the chances of an injury. Allowing the cow to move freely through her total milking, feeding and resting environment can help reduce the chance of injury. Elimination of the holding area reduces physical stress on the feet and legs of the cow from standing time and jostling for position in the holding area. I have seen significant reductions in foot and leg injuries and a real reduction in lameness in free-flow systems. Hoof health is improved and preventative hoof health care time and expense are notably reduced when compared with all other systems. Personally, I have transitioned over 15 herds from conventional milking systems to free-flow robotic milking systems, and they have experienced a reduction of feet and leg issues and a resulting increase in cow longevity within the herd.

Cows in free-flow robotic milking systems typically have fewer foot and leg problems and with electronic monitoring systems, which aid in heat detection, the herds I have worked with experience 20 to 25 percent greater reproduction efficiency versus what they experienced in the conventional parlor.

Imagine if we could consistently monitor 100-plus different points of our personal health condition and send it directly to our health care providers. We can do that with robotic milking systems. We can take better care of our animals than we do ourselves.

As we move forward, I believe robotic milking systems offer many an opportunity to sustain and improve profitability. What would it mean to your business if you could decrease your involuntary cull rate from mastitis and udder injury, lameness and foot and leg injury, and culling caused by late-bred or unbred animals? Robotic systems can provide a base to help us improve our dairy operations in all of these areas.

My clients are very proud of their facilities and many offer tours of their farms to show the nonagriculture community what they are doing. It is very rewarding to see visitors' eyes light up and the smiles on their faces when they watch dairy cows enter robotic milking systems on their own and enjoy the milking process – changing public perception.

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