Technologies for Herd Improvement

by ***Heather Smith Thomas***

There are many technological advancements that can improve production efficiency, and each producer needs to determine which ones can be beneficial for his own operation. Kelly Bruns, University of Nebraska West Central Research and Extension Center, says when considering adopting new technology to increase beef production, producers should carefully analyze the inputs required to obtain these increases.

Beef production per cow has increased over the past 30 years. "This increase can be attributed to advancements in genetics, nutrition, health and growth enhancement technologies, as well as improved management and information gathering," Bruns says. "While many notable improvements come with a cost, there are some that have a much greater return on investment than others."

Producers should find ways to adapt the use of technology, taking advantage of the simple ones to create a more profit-oriented operation. There are always ways to improve efficiency and to reduce expensive inputs.

Heterosis

"If we were to ask cow-calf producers what is the one improvement that has made the most noticeable advancement in their operation, many of them would list improved genetics," Bruns says. "It is easy to see and quantify the dramatic changes that have taken place since the 1950's in the growth potential of calves we produce. There has been a large increase in slaughter weights."

For the seedstock producer or cow-calf producer, Bruns says there are several genetic technologies that do not require use of any sophisticated technology.

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"Just the aspect of crossbreeding, which the Hereford breed is now in a great position to offer, given the current population of Angus-influenced cattle in the United States, can hugely benefit the commercial cattleman."

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Expected progeny differences (EPDs)

"We also have the very basic tools of EPDs," Bruns says. "People can look at sire summaries provided by sale catalogs, and these allow us to make useful decisions. We can also look at the indexes, such as the maternal index, calving ease index or the Certified Hereford Beef Index (CHB$) that the Hereford breed utilizes," Bruns says. Breeders can select for balanced traits that will continue to move their female side forward as future cows, as well as beef production.

Robbi Pritchard, South Dakota State University, says EPDs are still underutilized at the commercial level, partly because there are so many now that using them may become confusing. "Sometimes a person needs to just look at the ones that are the most important to their own operation and breeding program, get some benchmarks on where they want to be, and not get lost in all the other data," he says. "Each producer needs to pinpoint priorities and focus on those.

"The huge payback of EPDs on bulls, whether it's on semen purchases or bull purchases, is to keep picking the numbers that build the right cow, if you are keeping daughters from those sires," says Pritchard.

Artificial insemination (AI)

"Another thing that ties into genetic improvement is artificial insemination," Bruns says. The latest National Animal Health Monitoring System (NAHMS) report showed that the percentage of commercial operations that utilize AI is only 7.2%. More than 60% of producers who chose not to use AI stated that labor, time and the difficulty of initiating the process were the reasons they didn't use it.

"AI is a very old technology, but still underutilized," says Pritchard. "The South Americans are doing a lot more AI than we are and have figured out how to AI even in large pastures. The idea that it's not practical to do out on the range is no longer true."

There have been attempts to quantify the true dollar advantage to using AI, but one illustration is the price differential between bred heifers that are sold as pregnant to AI breeding compared to heifers that are bull bred. "There is a substantial difference that would more than pay for the labor and the AI," Bruns explains. "There is a tremendous amount of added value in this group."

There are some cost-effective methods that can be used today to synchronize a herd and then allow the use of the desired genetics that are now available to meet herd goals. With AI, the options for matching individual cows with the most suited genetics are more valuable than ever. As technologies evolved, AI companies have trained technicians who can cost-effectively inseminate cattle with use of the new synchronization protocols.

"The American Hereford Association has done very well with their young sires testing program," Bruns says. "They can provide that information to commercial producers and make cooperative agreements to get those genetics out to commercial herds. When you look at what it costs to collect a bull, and the cost per unit of semen, it is worthwhile for purebred producers to provide those genetics at a cost-effective rate to commercial producers. The commercial producer and purebred producer would easily see benefits from this ability to capture more data, promote the breed and get more offspring out there."

Nutrition

An improvement of 0.1 lb. in feed efficiency is worth $10 per head at the feedlot, according to Bruns. "In an effort to keep costs down,

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more by-products are being fed," Bruns says. New technologies in feed fabrication, creating cubes and pellets, and treating cornstalks have helped some producers keep feed costs down.

"As the genetic potential of cattle improves, there will be greater emphasis on matching cattle to proper nutrition to program them to a specific endpoint," he says. "There is renewed interest in putting more calories in front of calves earlier in life. Calves that are grown appropriately will maximize growth and have greater carcass weights."

There are simple ways to improve feed to gain and add value. "Increasing feed efficiency through better management practices becomes important," says Bruns.

Pritchard points out the value of using feed scales — weighing feed can save producers money every year when feeding concentrate to young bulls or replacement heifers. A study one of his colleagues did about 30 years ago was revealing. "They were developing heifers in a drylot on a high roughage diet," he explains. "If a person is growing 100 heifers for 133 days, measuring each ingredient in the feed mix, the result you get in production efficiencies would pay for the wagon and scale. When we supplement cows we usually don't measure the amount of cake; we generally just estimate. Cake is not cheap, so what we tend to do is watch what shape the cows are in — and if they are not in good enough body condition, we feed more cake. When they are in good shape, what we may not have realized is that with a set of scales we could have been accurate enough to feed them 10% less cake that winter. That savings would have paid for the scale," says Pritchard.

Cattle management and handling

There are also ways to improve programs through new management and cattle handling concepts. "Applying new cattle handling ideas, some of which are not actually new, and portable corrals can make a lot of things feasible," Pritchard says.

"I think this one thing, the ability to set up a corral anywhere you need one, would help with many of the things that are on the list of technologies we can readily take advantage of, like AI, preg-checking, how and when we use our vaccines, etc.," he says. Some ranchers feel locked into vaccination schedules that revolve around when they might have the cattle close to home so they can vaccinate them.

"Some cattlemen have developed an efficient way to use portable corrals," Pritchard explains. "If we could improve on that management technique, then the vaccine programs could be much better and more uniformly applied, as well as other strategies."

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There are also ways to improve grazing management and increase stocking rate. "Rotational grazing, with adequate periods of rest and recovery of pastures has shown vast improvements in stocking rate and drought resistance," Bruns says. "New, innovative fencing technologies make it easier to move cattle daily or even multiple times per day."

Ranchers can improve their grazing management, produce more beef per acre and benefit the land in the process. "When expanding our beef herds, we often have to do it without expanding our land base," Bruns says. If producers can increase production per acre with higher stocking rates while at the same time making the land healthier, this is perhaps their biggest potential for improvement.

Their research focus has been on how to produce more pounds of beef per acre of grass and increasing stocking rate, while making the land resistant to drought. "Some people are trying to implement these concepts, but if our industry had a higher percentage of producers really taking a look at grazing management, we would make huge strides in production," he says.

Traditional ways of management are not always the most beneficial. "Many ranchers think rotational grazing takes too much time and effort but the benefits are so great that we really can't afford to not do it," Bruns says. "Besides improving pasture health and production, you get to see all your cattle more often, you have calmer cattle and you know your cattle."

These benefits all go hand-in-hand with low-stress handling, which also improves cattle health. This management tactic requires no high-tech methodology, can reduce labor and improve profits. "Progressive ranches demand that employees adhere to strict rules on handling and provide training opportunities," Bruns says. "The 'Bud box,' created by Bud Williams, one of the gurus of low stress handling, has revolutionized processing facilities and working corrals on ranches."

Often with low-stress methods of moving and working cattle, one person can do what it took multiple people, saving labor costs. Cattle handled in this manner are easier to manage and stay healthier. These methods have greatly reduced sickness rates in feedlots and have improved feed efficiency.

Implants

Pritchard says implants are an old but underutilized technology. "In earlier years we used them a lot, and then they went out of vogue because for awhile buyers misunderstood how they worked and discounted implanted calves," he says. "But a good implant strategy for suckling calves can have significant payback. On our northern plains calves, if we do it right, we can pick up more than 30 lb. on weaning weight, and today that's a lot of money," says Pritchard.

Data summarized by Michael King, a research assistant at Kansas State University, from Superior Livestock, showed there was no price difference or discount between implanted and non-implanted cattle.

"Some people choose not to implant because they think the calves will be discounted at the marketplace, so they don't utilize this technology," Bruns says. "But the data from 11,350 lots representing 11.1 million cattle sold through Superior Livestock Video Auctions in 2011 and 2012 where 31% of the calves received an implant showed no differences in price."

Implants were one of the earliest and most revolutionary technologies in the beef industry and still have the most impact today for increasing production. "Estimated returns can range from $30 to $67 per head," Bruns says. "Economists at Iowa State University reported the value of implants at $34 per head for the cow-calf producer and $71 per head in the feedlot." This large return on investment can be captured with very little infrastructure.

"However, over time we've had fewer producers choosing to use this proven technology," he says. Only 11.9% of all cow-calf operations used an implant prior to weaning in the 2009 NAHMS report, compared to 14% in the 1997 report," he says.

There are many ways to make a ranch or feedlot more profitable. "While technology has proven to be a useful tool within the industry, it will be our innovations in developing production schemes that focus on profit that will keep the industry moving forward," Bruns says. HW

Pictured is Marvin Lange with a portable breeding barn he invented.