

Replacement Rationales

Heifer selection and development for the long haul.

by **Troy Smith**, field editor



PHOTO BY SHAUNA ROSE HERMEL

35 Keys to Success

Seedstock & Genetic Selection

It looks like more heifers will be bred this year. Reduced cow slaughter and declining heifer placement in feedlots suggest that expansion of the U.S. beef cow herd is under way. During his late-2014 speaking engagements, Livestock Marketing Information Center (LMIC) economist Jim Robb repeatedly predicted a very modest rate of expansion. Barring a return to widespread drought, Robb said he expects cow-calf producers to continue retaining heifers for breeding. However, he looks for the national tally of breeding females to increase by about 1% during each of the next few years. For

most producers, the rate of expansion will be limited by its high cost.

“Potential returns for the cow-calf business are record-high, but the capital requirements have never been higher,” explained Robb at the recent State of Beef Conference in North Platte, Neb. “All inputs, except for fuel, could and probably will go higher still, and while interest rates have been low, that’s likely to change, too.”

Robb’s prediction isn’t meant to dampen anyone’s enthusiasm for heifer retention, but it emphasizes the importance of implementing a cost-effective process for

selecting and developing heifers. Depending on development costs and the value of the calves she produces, a breeding female may not pay for herself until she has raised three or four calves. So, heifers with the most profit potential are those having potential for staying in the breeding herd for a long time.

With longevity and long-term improvement of reproductive performance of the cow herd in mind, we asked some reputable producers about their methods of heifer selection and development. Included were Cusseta, Ala., cattleman Jim Collins and Yuma, Colo., rancher Ryan Noble, who retain heifers from within their respective commercial Angus herds. In contrast, Kent Hubbert buys heifer calves from which he chooses replacements for his Odessa, Neb., operation. All three of these producers manage their replacement-heifer enterprises with an eye on long-term profitability.

Raising females for the Southeast

Headquartered in east-central Alabama, Jim Collins and his family have marketed bred heifers throughout the Southeast for more than 20 years. Collins says raising replacement-quality females starts with sire selection. Cows are bred by natural service, using closely related bulls that have been DNA-tested with the high-density (HD) 50K genomic test. Genomically enhanced expected progeny differences (GE-EPDs) offer improved predictability that helps Collins better match bulls with various groups of cows.

“We’re looking for a targeted balance of maternal, growth and carcass traits,” explains Collins, noting how bulls are assigned to breeding pastures in an effort to complement female bloodlines and the cows’ recorded performance.

Evaluation of heifer calves starts early with monitoring of growth. Weights are taken at first processing and again at weaning. Eliminated from consideration are any poor-doing heifers, along with any that don’t measure up structurally, and those with questionable temperament.

“Our goal is to retain heifers of moderate frame (Frame Score 5) with good feet and legs. They need to be deep-ribbed to have the volume and capacity to thrive on forage,” says Collins, who also prefers to retain daughters of older cows, provided the heifers meet other selection criteria.

“Those older cows have raised a calf every year, even when conditions were harsh, so they are adapted to the environment,” he explains.

After weaning, replacement-heifer candidates are sorted into management groups by age and size. Targeting a breeding weight of approximately 60% of expected

mature weight, heifers are developed on grazed forage primarily, including Bermuda grass, ryegrass and fescue pastures. Heifers are supplemented as necessary with byproduct feeds such as soy hulls, corn gluten, peanut skins, candy byproduct, cottonseed and cotton gin trash. The choice of byproduct is driven by price and availability.

For years, all Collins heifers received a reproductive tract examination. Over time, fewer and fewer heifers were eliminated on the basis of unsatisfactory reproductive tract scores. In recent years, only a cross-section of heifers are examined and scored.

Following their first breeding season, heifers are evaluated for pregnancy by ultrasound. Heifers that will go into the Collins herd are chosen from those that conceived early — within the first 20-25 days of the breeding season. Fertility, as indicated by early conception, is a key factor in identifying the “keepers.” When heifers are preg-checked, the gender of embryos also is determined. Provided other criteria are met, Collins prefers to keep heifers carrying female calves.

The GeneMax® Focus™ genomic test was applied to Collins heifers for two years and, in 2014, GeneMax Advantage™ was used. Test results assign scores and rank heifers on the basis of three multi-trait economic indexes:

1. Cow Advantage scores represent maternal traits and rank females for net return, from heifer development through weaning of progeny.
2. Feeder Advantage scores represent the genetics tested females transmit to their calves for net return from growth and feed efficiency in the feedlot, as well as from carcass merit.
3. Total Advantage scores represent a combination of Cow Advantage and Feeder Advantage scores.

Collins says DNA testing complements the operation's female-focused selection practices and other selection tools used, including the Reputation Feeder Cattle Genetic Scorecard developed by Verified Beef LLC. Collectively, says Collins, these tools allow for more

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confident predictions of which heifers have the most brood-cow potential, and will be most likely to transmit important production traits to future offspring.

Finding the right ones to spend money to develop

Noble Ranch, in eastern Colorado, is also testing females with GeneMax Advantage. Testing was recently completed for bred heifers born in 2013 and the 2014 heifer calves. Fourth-generation rancher Ryan Noble relies on EPDs to aid sire selection and says he sees DNA testing of commercial heifers as an aid to female selection.

“Never before has keeping a replacement heifer been such a large investment in capital. If we are going to spend the money on a heifer, let's spend the money on the right ones. We feel the (GeneMax) program will help us to stack the deck with high-indexing females and take more of the guesswork out of keeping replacements,” explains Noble.

“If you start with a weaned heifer calf this fall, it will be 2017 before you get carcass or

“As we rebuild the nation's cow herd, we need to improve its overall reproductive performance.”

— Rick Funston

performance data back from her first progeny. I think that spending a few dollars right now to weed out the underperforming heifer is a whole lot better than waiting a thousand days to see how her offspring perform.”

Noble Ranch manages some 700 cows that are expected to harvest their own forage, from native range in the summer to crop residues in the winter. Typically, the cows graze for more than 350 days of each year. Heifers retained as replacement candidates must represent a balance of economically important traits, and they are scrutinized hard for soundness and disposition. Ultimately, though, heifers must demonstrate early that they will fit within the Noble production system.

“We don't cut the heifers any slack. We keep the oldest heifers — more than we really need — and really challenge them,” Noble explains. “We run them on cornstalks, with supplemental protein plus a vitamin/mineral supplement, along with our coming 2-year-old cows that have just weaned their first calves. That way, those young cows don't have to compete with the older cows, and they settle the yearling heifers and teach them how to graze stalks.”

“Those older cows have raised a calf every year, even when conditions were harsh, so they are adapted to the environment,” says Jim Collins, who prefers retaining daughters of those cows as replacements.

Noble says the heifers don't gain much more than ¾ pound (lb.) per day during a 120-day period on cornstalks. Compensatory gain comes after that, and on through breeding time, as heifers are fed a high-roughage ration containing an ionophore. The goal, says Noble, is to have heifers on a plane of nutrition that produces weight gain without making the heifers fat. He advises careful attention to balanced vitamin and mineral supplementation.

Noble also operates a custom artificial insemination (AI) business, and breeds close to a thousand outside females annually. After quite a few years of custom AI work, he's seen the products of a wide variety of heifer-development programs.

“I've seen heifers ranging from very thin to feedyard fat, and I've come to understand that having heifers gaining weight is what's important. Even if they're pretty green, as long as they are gaining, you'll usually be successful in getting a good percentage of heifers bred,” explains Noble.

Noble admits that he didn't always develop replacements this way. He once thought it necessary to feed yearling heifers more aggressively to get the maximum number of them bred. However, too many failed to rebreed.

“When you rough them through as yearlings, you'll find the fertile females that fit the environment. You'll end up with some opens, but they're still worth a lot as feeder heifers. I'd much rather have those fall out early than after we've invested more money in them.”

Purchasing maternal genetics

Some commercial cow-calf producers prefer to invest their money in ready-made replacement females. Their resources might not be well-suited to retaining and making cows of home-grown heifers, so buying bred heifers or bred cows is a viable alternative. Some producers, like central-Nebraska's Kent Hubbert, purchase females in order to maintain a herd of maternal-type cows that

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can be bred to high-growth bulls to produce only terminal calves.

Along with buying heifer calves from which to choose replacements for his own 500-head cow herd, Hubbert develops and breeds heifers for resale. Typically purchased at auctions in western South Dakota and western Nebraska, Hubbert and a trusted order buyer seek large drafts of heifers consigned by reputable, forage-based cow outfits.

While he is picky about type and quality, not all heifers come with a complete and detailed history of genetics and previous management. There is some variation in size, so heifers are sorted into management groups. All are scrutinized for pelvic size and

their reproductive tracts are examined and scored. Heifers that pass muster are then tested by a no-frills development program utilizing rations built around the same kinds of feedstuffs that comprise winter diets for mature cows.

“The heifers are drylotted the whole time and fed low-quality roughage — mostly (harvested) cornstalks — plus wet distillers’ grains. They get no grain. That way, the heifers most likely to become productive cows rise to the top,” says Hubbert.

Heifers are synchronized and bred by AI for February and April calving periods. Heifers that failed to conceive after the first insemination are identified when ultrasound examinations are performed 30-45 days afterward.

“Those heifers get another round of AI, and most will end up bred for an April calving period,” Hubbert explains. “We give

them a second chance to breed by AI, but I think any found open after that just shouldn’t be cows. They aren’t adaptable and probably wouldn’t stay in the herd long-term anyway.”

Need predictors of reproduction

Over the past several years, Rick Funston has appeared at numerous conferences to talk about heifer development. This publication and numerous others have shared the University of Nebraska reproductive physiologist’s opinions and the research data on which they are based. Funston has repeatedly lamented the fact that while cow-calf producers have multiple tools for genetic selection, few point the way to females likely to exhibit high levels of reproductive performance.

“From the standpoint of reproduction,” states Funston, “the tools don’t tell us, very well, which heifers to keep.”

Kent Hubbert tests purchased heifers by developing them on a no-frills program utilizing rations built around the same kinds of feedstuffs that comprise winter diets for mature cows.

Funston has criticized heifer-development systems that chase high pregnancy rates, but result in overfed heifers. It's expensive, and may actually set heifers up to fail later. Funston says overdevelopment may contribute to situations where a female must reach a certain degree of fatness in order to

become pregnant. He says he can't see the logic in growing breeding heifers on diets containing large amounts of grain and then expecting them to spend the rest of their lives foraging.

Funston advocates development systems utilizing feedstuffs similar to what replacement females will consume after entering the cow herd. He favors systems that meet all of the heifers' nutritional needs, but offer nothing extra. Challenging heifers during development makes them earn their way into the breeding herd, but Funston believes those heifers are most apt to remain there longer.

To select for longevity, Funston also recommends choosing replacement candidates from among heifers born early in the calving season. It's an indication of their dams' fertility and the heifers' potential fertility. Then, recommends Funston, retain

the heifers that also conceive early in their first breeding season.

"Research has indicated that heifers having their first calf earlier in the calving season remained in the herd longer compared with heifers that calved later in the calving season," says Funston, noting that these heifers are more likely to breed back early and continue to deliver calves at the front end of subsequent calving seasons. Cows that consistently calve early also wean more pounds of calf during their productive lives.

"Therefore, heifers calving earlier in the calving season have greater potential for longevity and lifetime productivity," adds Funston. "That's important. As we rebuild the nation's cow herd, we need to improve its overall reproductive performance."



Editor's Note: *Troy Smith is a cattleman and freelance writer from Sargent, Neb.*