It’s Time for Spring Vaccinations

Jeremy Powell

With spring breeding season approaching, now is the time to be thinking about spring vaccinations. The goal of vaccinating the herd is to protect the cows against reproductive diseases prior to the breeding season and also to provide protection to the spring-born calves against potential disease agents. Obviously, no vaccination program is 100% effective, but the objective is to maintain a high level of herd immunity to minimize disease outbreak and improve profitability for the operation. Vaccination programs should always be customized for your operation, and a number of different vaccines and vaccine combinations are available for cattle. Therefore, it is important to work with a veterinarian who is familiar with your beef cattle operation when making selection decisions.

When determining which type of vaccine to use, keep in mind that there are differences between a modified-live vaccine (MLV) and a killed vaccine. Advantages of MLV products include a fast immune response and long duration of immunity. The downside of MLV vaccines is that some are not labeled for use in pregnant cows or in calves that are nursing pregnant cows. However, there now are a few MLV vaccines on the market that can be used in pregnant cows as long you closely follow the manufacturer’s recommendations for these products.

Killed vaccines contain only killed microbes or microbial parts. They are generally considered to be safer and more stable than the MLV products but produce shorter-lived immunity. When used for the first time in an animal, most killed vaccines require an initial dose followed by a booster dose two to six weeks later.

Although herd health needs may vary among operations, there are a few standard vaccines that should be included for most herds. For cows and bulls:

- 4- or 5-way viral vaccine (IBR, BVD, PI-3, BRSV)
- Leptospirosis
- Vibriosis
- 7-way clostridial (Blackleg)

These vaccines will protect against diseases that can lead to a loss of efficiency and profitability in a cowherd. Vaccines recommended for calves include:

- 4- or 5-way viral vaccine (IBR, BVD, PI-3, BRSV)
- 7-way clostridial (Blackleg)

If vaccinating replacement heifers consider:

- Brucellosis (Bang’s) vaccine between 4 and 12 months of age
- 4- or 5-way viral vaccine (IBR, BVD, PI-3, BRSV)
- Leptospirosis
- Vibriosis
- 7-way clostridial (Blackleg)
Some operations may give consideration to other vaccinations based on the case history of diseases in the herd. If your herd has encountered problems with pinkeye, calf scours or respiratory pneumonia in the past, there are vaccines for these problems that will help limit future outbreaks. Since vaccine needs vary from herd to herd, it is important to visit with your veterinarian to get input when selecting vaccines for your operation.

Several factors can occur that may cause a vaccine to result in an inadequate immune response. Handling of vaccine is crucial and special care should be taken. Improper storage can damage vaccines. Vaccines should be kept at refrigerated temperatures between 35°F and 45°F. Exposure to freezing temperatures or to temperatures that exceed the recommended range could leave the vaccine ineffective. It is important to protect vaccine while at the chute and during transport to maintain ideal temperature. Also, the use of disinfectants on needles or inside the barrel of pistol-grip syringes can lead to inactivation of modified-live vaccines.

A general concern of some producers is whether or not the costs of implementing a vaccine program are justified by disease prevention. Avoiding a potential health disaster in your cattle operation validates the cost. Keep in mind the old adage – “An ounce of prevention is worth a pound of cure.” In other words, the costs of a disease outbreak will far exceed the price of disease prevention.

Remember that a vaccination program alone shouldn’t be considered your complete herd health program. The vaccination program should be viewed as an important part of an effective health management plan that also includes proper nutrition, parasite control and a simple biosecurity plan for your operation.

Find out more information about beef cattle herd health management at your county Extension office.

Replacement Heifers – A Strategy for Success

Brett Barham

Traditionally, many cattlemen have selected replacement heifers based largely on which heifers look the best. While this selection practice emphasizes genetics for growth and tends to pick heifers from the earliest-calving cows, it may not result in sufficient focus on genetics for expressed fertility, calving ease, optimum levels of milk production, sensible maintenance requirements and adequate longevity. Present-day genetic information affords producers the ability to produce and select replacements with a higher likelihood of success, as compared to traditional approaches.

What Makes a Successful Replacement Heifer?

What does a replacement heifer need to do in order to achieve production success? Most producers would agree that successful replacements:

- reach puberty and become pregnant early in the first breeding season;
- calve unassisted each year;
- breed back early in the second breeding season as wet two-year-olds, with high levels of sustained fertility thereafter;
- have optimum milk and fleshing ability, so as to wean profitable calves yet maintain sufficient body condition for early annual rebreeding;
- have sensible maintenance requirements as a result of mature size and milk production levels which are matched to available feed resources;
- have sound teats, udders, feet and legs as well as calm temperament and as much longevity as possible to minimize annual replacement rates;
- represent genetics for optimum levels of growth, efficiency and carcass merit for the purpose of producing profitable feeder and fed cattle as well as replacements; and
- possess high salvage value so as to offset replacement costs.

Given the demanding list of attributes required of replacement heifers, it is useful to consider how genetic information might be used to select for success. Opportunities to take advantage of genetic information exist at three points of heifer production:

1. When sires are selected to produce replacement heifers
2. When heifers are selected from the pool of replacements
3. When sires are selected to breed replacements

Selecting Sires to Produce Replacements

The better the pool of potential heifers from which to select, the better the odds of selecting a productive group of replacements. For commercial cattlemen, there are at least two keys to producing a superior
pool of replacements: 1) a well-designed crossbreeding program that generates maternal heterosis and uses breeds well adapted to the production environment and 2) use of EPDs to select sires with genetics for the combination of items listed above.

Choosing which breeds to use in crossbreeding starts with an evaluation of your present cowherd and feed resources, as well as a determination of the targeted end-product market. Selecting breeds from which to produce replacements should also go beyond evaluation of only puberty and level of milk production. Selection should include consideration of breed comparison data related to maternal calving ease, calf vigor and survivability, cow maintenance energy requirements, mature cow size, optimum milk production, convenience traits such as teat and udder soundness, longevity and traits contributing to life cycle production efficiency.

Selecting Replacements Heifers

In addition to known pedigree and performance information from the sires and dams of replacements, performance data can be collected from yearling-age heifers when they are processed prior to breeding as part of the herd health program. Collection of the following information can help guide selection of heifers toward genetics for early puberty, maternal calving ease and growth, as well as moderate mature size and adequate fleshing ability.

Reproductive Tract Scores - The reproductive tract scoring system estimates a heifer's pubertal status via rectal palpation of the uterine horns and ovaries. Tract scores range from one to five, with heifers scored as four and five believed to be cycling based on the presence of a corpus luteum or large follicle on the ovaries and good uterine tone. Heifers scored as three are thought to be on the verge of cycling, while those scored as one and two have more infantile, less developed reproductive tracts and are not yet cycling. Research has indicated that heifers scored as three, four or five generally have higher pregnancy rates and earlier conception dates compared to heifers scored as one or two. In addition to serving as a heifer selection tool, reproductive tract scores can be used to determine if a group of heifers is sexually mature enough to respond favorably to a synchronization and A.I. program. Palpation of the reproductive tract can identify freemartins or heifers that might already be pregnant prior to the start of the breeding season. Many large animal vets can evaluate reproductive tracts of replacement heifers.

Pelvic Measurements - Calving difficulty primarily occurs among first-calf heifers as a result of "heavy" calf birth weight in relation to the size of the dam's pelvic area. While birth weight is unquestionably the key direct factor related to calving ease, pelvic area appears to be the highest ranking maternal variable. Colorado State University research has shown that as birth weight of calves increases and pelvic area of replacement heifers decreases, the incidence of assisted births also increases. Depending upon the average pelvic size of the group, culling heifers with the smallest pelvic areas (i.e., smallest 5 to 10 percent) has been shown to help reduce the incidence of assisted births.

Yearling Weight, Hip Height and Condition Score - Weight, height and condition information can be used to select heifers with adequate early growth and fleshing ability but help avoid selecting heifers that might be too big and hard fleshing later in life. Avoiding heifers that are too extreme – either excessively big or small – is expected to contribute to greater cowherd uniformity.

“The accuracy of replacement heifer selection can be improved by combining these yearling data with knowledge of pedigree information from sires and dams for appropriate levels of maternal traits (i.e., milk) and longevity, with incorporation of a visual evaluation of soundness and doing ability.”

Selecting Sires for Replacement Heifers

While the first test of a replacement heifer is becoming pregnant early in the first breeding season, the next major hurdle is the heifer's ability to give unassisted birth to a live, vigorous calf. In addition to avoiding production and selection of heifers with genetics for high birth weights themselves, selection of service sires on the basis of their EPDs for low birth weight, high expected calving ease and short gestation length is the most reliable way to minimize calving problems.

Calving ease in first-calf heifers is also related to reproductive performance during the second breeding season. Research has demonstrated that heifers that do not require assistance at calving tend to have higher pregnancy rates following the second breeding season by 3 to 5 percent and are about a week earlier in terms of day of second calving, as compared to heifers that require assistance. This is most meaningful when you consider that the number one reason cows are prematurely culled at young ages is because of reproductive failure (open at the end of the breeding season).

Implementation of an A.I. program and synchronization, whereby sires can be reliably selected for calving ease in
addition to adequate performance in other traits, is the most sure-fire way to genetically manage for a successful first calf from replacements. Through the use of A.I., unique service sires can be used that not only minimize calving difficulty but also pass on genetics for the desired combination of maternal, growth and carcass merit. Considerable risk can be managed through the use of synchronization and A.I. in replacement heifers.

**Summary**

Successful replacement heifer selection begins with wise selection of the sires from which heifers are produced. Once a superior pool of replacements is developed, use of performance information collected on yearling heifers, as well as information known about the sires (or group of sires) and dams of heifers, can be used in conjunction with visual evaluation to improve the odds of selecting the most productive heifers. Finally, smart selection of sires to breed to heifers can help ensure calving ease and production of a profitable first calf from replacements. Through planned crossbreeding and disciplined use of available genetic information, heifers can be produced, selected and bred with more confidence and less risk, as compared to traditional practices.

**Source:** Dr. Kent Anderson, North American Limousin Foundation

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**Recording of Recent Extension Programs Available Online**

Brett Barham

Beef producers are busy people and may not find the time to attend educational meetings that might provide some valuable information for their operation. Sometimes a program of interest may involve a several hundred mile trip and can be quite costly to attend. The Extension Animal Science group has been recording many of our programs so that producers who were unable to attend will be able to get the information presented at a meeting. This allows you to view the information presented at a later date and on your schedule. Here are some recent programs that are available online:

**2011 Arkansas Beef Quality Conference**
http://vimeo.com/channels/arbeefconf

**2011 River Valley Beef Conference**
http://vimeo.com/channels/182232

**2011 Arkansas Cow Calf Conference**
http://vimeo.com/channels/190101

**2011 Batesville Station Livestock and Forestry Field Day**
http://vimeo.com/channels/191168

I hope these videos are helpful to you and your operation. I would appreciate hearing any feedback you might have on these online videos – were they useful, did you have any technical problems, etc. Send me an email (bbarham@uaex.edu) or give me a call (501-671-2162) with any feedback you might have.

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