

# Heifer management decisions

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## **Abstract**

This presentation represents my experiences with a beef heifer development enterprise. Hopefully, this information can benefit some of your clients' operations, or at least challenge your thoughts on heifer development.

## **Résumé**

Cette présentation constitue mes expériences dans un élevage d'engraissement de génisses de boucherie. Espérons que ces informations pourront être utiles aux opérations de vos clients ou à tout le moins pour remettre en question vos idées sur l'engraissement des génisses.

## **Introduction**

After spending 11 years in rural practice in North Texas, I spent 9 years in academia. Two years were spent in graduate school at Kansas State and 7 years on the faculty at the North Carolina State University, College of Veterinary Medicine. During that time, I took time to consider what beef cattle niche would be the most profitable once I returned to Texas and resumed my ranching interests. Since 2001, I have been heavily involved in a beef heifer development business in Palo Pinto County, Texas.

In this presentation, I will describe my heifer development operation in North Central Texas, how we add value to purchased weaned heifer calves, and how I would approach various heifer decisions in a cow/calf enterprise.

### **Holt River Ranch "Value Added" Heifer Program**

#### *History*

Starting in 2001 with about 250 heifers, we have developed heifers every year. Typically, 800-1000 annually are developed, bred and sold, with the majority bred to calve in the spring and a smaller number to calve in the fall.

#### *Procurement*

Some raised heifers go into our heifer development program, but the majority are purchased. Almost all heifers are purchased in single source load lots, usually from producers with whom we have historical performance information. Some heifer calves in smaller lots are purchased out of bred heifers we have previously sold. Weaned (> 45 days) heifer calves with 2 rounds of viral and clostridial vaccines, calf-hood vaccinated for *Brucellosis* and "guaranteed open" are usually purchased.

#### *Arrival Protocol*

In the typical scenario, cattle are unloaded in our receiving pens or directly into a 5-acre grass trap. Free-choice hay (mostly average to good quality coastal Bermuda), free-choice trace mineral, and a 50:50 mix of soyhull pellets and corn gluten feed are provided. Heifers are usually kept in the receiving pen for 2 weeks prior to turn-out on wheat pasture (if available) or native pasture. The 2-week period is designed for acclimation and hot wire training. Generally, within a week of arrival, heifers are processed. If we are comfortable with the weaning vaccination and health program from the source, additional respiratory virals or clostridials are not administered. Deworming will depend on prior history as well. All arriving heifers are tested for BVD-PI and tagged with a large white bangle tag with a 4-digit number. The first number represents the year the heifers are to be bred. We cross reference the bangle tag with the *Brucellosis* vaccination tag. If there is pertinent information available from an existing bangle tag, we will also record this information. RFID tags will be utilized beginning this fall.

Even though almost all purchased heifers have been weaned for at least 45 days, commingling of groups is avoided for another 45 days. Very few respiratory cases are treated with this approach.

#### *Nutritional Management*

Our heifer development nutrition program is typically based on non-irrigated wheat pasture. The ranch is in a drought-prone area in north central Texas and in some years wheat is not available to graze until the March-May time period. Heifers are grazed on dormant winter range with protein supplementation, prior to turn-out on wheat pasture. Alternatively, in very dry years, heifers are fed in "grass" traps until suitable forage is available. Typically, some of the best breeding results are on heifers that are slightly behind on reaching target weights, but then get a good flush of wheat 6 weeks to 2 months prior to breeding. The calculated target weights at breeding do not have to be achieved with a consistent daily gain. Heifers can be essentially roughed through the winter on native pasture and then pushed on wheat in late winter/early spring. There have been reports of poor reproductive performance on heifers developed on good quality wheat pasture. This has been blamed on over-conditioning or protein excess affecting reproduction. We have not experienced this phenomenon, likely because our no-till, lower-input, and later-planted wheat is not good enough to cause these problems.

### *Labor*

There are generally around 1000 animals in inventory, counting the overlap between breeding seasons and a small cow herd. Additionally, some steers are grazed on wheat. There are no full-time employees, although 1 employee lives on the ranch and divides his time between my ranch and another family ranch. Contract day labor is utilized extensively, especially during breeding seasons.

### *Cattle Handling*

Low-stress stockmanship techniques are used and there is a consistent effort to improve in this area. Cattle are intentionally handled by several methods to accommodate diverse handling styles of buyers. Heifers are acclimated to horses, 4-wheelers, and people on the ground. A 'bud box' type system is utilized, and hot shots are very rarely needed. Multiple trips (6 to 8) through our chute system creates the occasional "balking" heifer.

### *Prebreeding*

Prebreeding exams and immunizations are routinely administered 30 to 60 days prior to our fixed-time AI date. The rectal exam includes identifying pregnancies and reproductive tract scoring. Purchased weaned heifer calves are almost always purchased as "guaranteed open", but often about 1 precocious pregnancy per truckload is identified. Reproductive tract scoring is done primarily to identify juvenile tracts, freemartins, and other causes of non-breeding. We typically only cull those with a 1 score. Pelvic measurements are performed to identify a few outliers to cull, but mostly as a marketing tool. Prebreeding immunizations include IBR-BVD, leptospirosis, and a clostridial booster. Modified-live viral products are used. Prebreeding immunizations are important and allow a peak immunologic response at the time of greatest exposure to reproductive disease agents early in the breeding season. Many producers do a good job of vaccinating around weaning time, but fail to administer reproductive disease vaccines 30 to 60 days prior to breeding.

### *Synchronization*

**Proven, fixed-time AI protocols have made the need for heat detection obsolete in commercial beef heifer breeding programs.** Far too much time is spent by beef producers (and their advisers) in switching synchronization protocols and trying to tweak existing, proven protocols. Any of the protocols approved by the Beef Reproduction Task Force have enough data to support their effectiveness. My suggestion is to pick 1 of these protocols that fits the unique management and resource potential of an operation, stick with this protocol, and focus on execution. We do not use any heat-detection devices. I have confidence in the AI protocol selected and do not want to be confused by trying to monitor heat response. We have been using the 14-day CIDR protocol. The disadvantage of this program is that it requires 4 trips through the chute, and it requires significantly more forward

planning, since CIDRs are inserted 33 days prior to fixed-time AI. This program works well for us when we have our heifers on wheat pasture close by and can move them several times from pasture to the working facility. Even though there are 4 trips to the chute, the number of total products administered is less and 1 trip (removing CIDRs) does not require head restraint.

### *Breeding Program*

Typically, our groups are set up to average 125 head per AI event. These can easily be bred within a 2-hour window. An experienced AI technician is utilized that has been doing all our fixed-time AI for 8 to 10 years. Care is taken to have a person thawing straws that pays attention to detail. Currently, the heifers being developed are almost 100% Red Angus. Both AI and clean-up sires must be in the top 20% of the breed for Calving Ease Direct (CED) EPD. The CED target is currently + 14 or greater. Although calving ease genetics are heavily emphasized, there is a focus on growth and maternal traits, with goals of top 1/3 for growth and at least the top 1/3 for maternal traits (Stayability and Herd Builder Index). We try to stay above breed average on carcass EPDs. The most important trait for our heifer development business continues to be Calving Ease, since a live calf is required before other traits really matter.

### *Post Breeding*

We strive to maintain access to a "spring flush" of grass (or the same prebreeding nutrition program) for at least 21 days post fixed-time AI breeding. Heifers are moved back to pasture immediately after breeding and movement is avoided after 4 days and before 45 days post AI.

### *Pregnancy Diagnosis*

At Holt River Ranch the fixed-time AI protocol is followed by clean-up bull turnout 10 to 14 days post AI. At 30 days, a Biopryn blood test is performed to determine which heifers are AI pregnancies. Later, AI pregnancies are confirmed, and clean-up bull pregnancies are staged with ultrasound. Another pregnancy exam is usually performed prior to shipment, particularly if much time has elapsed between the last pregnancy examination. Our contract has a pregnancy guarantee which states any heifer found to be open within 30 days of purchase will be replaced or the buyer can take the heifer to a local auction market and be compensated for the difference between sale and purchase price.

### *Marketing*

Buyers consist mostly of repeat customers, word of mouth contacts, and those that see our cattle on CattleRange.com. CattleRange.com provides a free listing service, where cattle are described by completing a standard form and providing digital images and/or videos. The commission paid is based on the honor system. No commission is paid unless the listed cattle sell based on contacts made

through the CattleRange website. Commission ranges from \$8 to 15/head, depending on volume represented.

Some loads of heifers are sold by forward contract early in the year. For instance, this year (as of early April) 3 loads of confirmed AI bred heifers are contracted, with deposit paid, for August delivery.

#### Follow-up

Each customer is provided with a list of primary and secondary IDs and projected calving dates along with a letter thanking them for their purchase. Other information, such as pelvic measurements, is made available on request. Calls are made to check on each customer during or immediately after the calving season. Feedback is actively pursued and utilized.

#### Production and Financial Goals

Below is a summary of our established and realistic operational goals.

	Baseline goal	Stretch goal
<b>Return on Investment (ROI)</b>	10%	20%
<b>Fixed-time AI preg rate</b>	60%	65%
<b>Overall preg rate (60 day)</b>	88%	92%
<b>“Turnover”</b>	Sold before 6 mos preg	Sold before 3 mos preg
<b>Customer satisfaction</b>	100%	110%

#### Competitive Advantages

The Holt River Ranch Heifer Development program has 2 distinct competitive advantages over others:

1. Detailed production cost information, including indirect costs.
2. Expertise in reproductive management.

These 2 competitive advantages should be marketed by veterinarians working with cow/calf operations developing their own heifers, custom heifer development operations, and “value-added” heifer developers. These competitive advantages can improve each operation.

### Heifer Decisions for the Cow/Calf Producer

#### Should I buy or raise my replacements?

Every lecture or article on heifer development addresses this question. This question should be preceded by a another, “Should I raise heifers, buy bred heifers or buy bred cows?” There are situations when the best option is to sell all heifers and buy bred cows (rather than heifers). Good, young bred cows are often more difficult to locate and purchase than bred heifers. Nevertheless, this option should be considered when analyzing the traditional buy or raising options for specific operational goals.

If the decision is made that cows are not an option, then what questions need to be answered to make the purchase vs raise decision? Following are a few questions to answer:

1. **Do I know my heifer development costs?** Dr. Jim

McGrann, retired Ag Economist from Texas A&M, continues to support a series of Beef Decision Aids, including some excellent tools for calculating heifer development costs. These can be found at <http://agecoext.tamu.edu/resources/decisionaids/beef> An example of a Beef Replacement Heifer Budget Summary and Fixed-Time AI Costs are included at the end of this paper. As exhibited by this budget, the heifer purchase cost is by far the largest production cost. A loss or profit is largely determined by the initial purchase cost, regardless of production performance. With knowledge of production costs and prices, “buying a profit” is more certain. These examples represent real data but are only examples. Downloading the spreadsheet and utilizing your own numbers will provide more meaningful information.

For the producer to make sound decisions on heifer development options, these costs must be known. Likewise, for a veterinarian to optimally assist a producer in making these decisions, these costs must be known. Knowledge and understanding of production costs may be the #1 driver in illustrating the value and ultimate implementation of expanded and cost-effective veterinary services.

2. **Do I have the management resources available to properly select, wean, develop and calve out my own replacement heifers?** The honest answer to this question is often “NO”. A good analogy for potential skill or resource deficiencies for heifer development on the ranch is a preconditioning program. Traditional preconditioning converts a ranch into a temporary feedlot environment, which may not be a wise choice for many operations. Likewise, heifer development is a totally different enterprise for the cow/calf operation. Even if, after careful analysis, the decision is made that the ranch has the expertise and resources to properly develop heifers, the decision still may be to purchase rather than raise. Heifer development is expensive and diverts ranch resources away from other ranch activities.
3. **Are there high-quality, bred replacement heifers from reputable sources in my area?** Producers often cite the low availability of reliable sources for genetically similar or superior heifers as the prime reason for raising their own. A Beef Heifer Buyer’s Guide can be found as an attachment. This document is based on my experiences as a bred heifer supplier and observations, especially over the last 20 years.

**Decision to Raise.** Once a decision is made to raise and develop replacements, based on the answers listed above, how are heifers selected to retain in an operation?

Phenotype, size, age, genetic indicators, disposition are all commonly used criteria for selection. On many ranches, the

heifers “I like” are kept and the heifers “I don’t like” are sold. Typically, a replacement rate of 15-20% would be expected, so in a 100 -cow herd with 90 calves and 45 heifers, one might keep 20-25 and sell 20-25. The replacement heifers would then be managed in a separate group and developed to weigh approximately 65% of their projected mature weight at breeding. (1300 X .65 = 845 lbs.). To reach these target weights, nutritional inputs requiring approximately 1.25-1.5 lb. ADG would be needed. The extra costs for labor, feed and facilities to manage and keep heifers separate from the herd needs to be calculated.

Alternatively, almost all the heifers (let’s say 43 to account for two obvious culls) could be kept. Now, the plan involves exposing all the heifers and basing the selection decision almost entirely with the bull. Only those breeding early are kept for replacements. This could be only those pregnant to fixed-time AI or those breeding in the first cycle. The target weight (and expense per heifer) can now be reduced since there are far more heifers than are needed. Based on numerous studies and experiences, these heifers can be developed to a target weight of ~55% (1300 X .55 = 715 lbs.) with minimal loss in reproductive performance. Assuming 575 lb. heifer weaning weights and 180 days from weaning to beginning of breeding, the required ADG would be 1.5 and .78, for traditional versus lower input development, respectively. The lower input heifer development system, when properly implemented and managed, may provide the most economical approach to raising heifers on the ranch. This approach places increased selection pressure to only retain heifers that match their environment and are capable of very early conception.

**Decision to Purchase.** Dr. Jim McGrann, developer of the IRM-SPA program, states that based on his data, if a producer owns less than 200 cows, purchasing bred heifers is usually a better economic alternative. Few cow/calf producers have a good handle on financial production costs and even fewer know their economic production costs (including

opportunity cost, return to operator labor and management, etc.). Even if one accepts that raising and developing heifers is usually more expensive than purchasing bred heifers, there are still other considerations. Heifer quality, health history, disposition and seller reliability are among other considerations when deciding to purchase bred heifers. Some groups of bred heifers are misrepresented by unknowing or unscrupulous sellers. Nevertheless, assuming a seller of bred heifers is reliable, purchasing versus raising is often a sound economic decision.

Size of Herds	Number of	% by	Head of	% by	Average
Head	Operations	Herd Size	Beef Cows	Herd Size	Sized Hd.
1 to 49	576,735	79.1%	8,616,893	27.2%	15
50 to 99	80,411	11.0%	5,373,199	16.9%	67
Less than 100	657,146	90.1%	13,990,092	44.1%	21
100 to 199	42,774	5.9%	5,652,042	17.8%	132
200 to 499	23,188	3.2%	6,609,375	20.8%	285
500 or more	5,938	0.8%	5,470,530	17.2%	921
200 or more	29,126	4.0%	2,079,905	38.1%	415
Total	729,046		31,722,039		44

**What should a bred heifer be worth?** The answer to this question depends on whether you are buying or selling. An old rule of thumb was that a bred heifer should be worth twice the value of an open heifer. This no longer appears to be accurate. To quote Harlan Hughes, “A bred heifer today is worth all of her future annual net cash incomes, including her cull value, discounted back to today’s dollars.” Another rule of thumb, that we utilized for several years, was based on the price of 550 lb. feeder steers from the previous year (see chart below). This relationship was not accurate in 2018, as bred heifers were priced relatively lower than feeder cattle. The depressed cull cow market appeared to drive down the bred heifer price. In our operation, with current prices and expenses, we need ~\$700 added to the price of the purchased weaned heifer calf to recover production costs.

### Cattle Fax Monthly Feeder for 550 lb Steer Price and Valuation of Bred Heifers

	Sept	Oct	Nov	Dec	Average Price	550 Lbs. Steers			
	9	10	11	12		\$/Hd. X	Bred Heifers in the next year		
							Repl Heif	Repl Heif	Repl Heif
2009	\$104.19	\$99.28	\$101.79	\$103.64	\$102.23	\$562	1.50	1.75	2.00
2010	\$117.75	\$117.48	\$121.90	\$129.14	\$121.57	\$669	\$843	\$984	\$1,124
2011	\$137.99	\$145.19	\$153.27	\$159.64	\$149.02	\$820	\$1,003	\$1,170	\$1,337
2012	\$157.16	\$158.01	\$158.79	\$164.27	\$159.56	\$878	\$1,229	\$1,434	\$1,639
2013	\$171.96	\$178.30	\$183.25	\$187.24	\$180.19	\$991	\$1,316	\$1,536	\$1,755
2014	\$263.76	\$277.42	\$280.64	\$281.21	\$275.76	\$1,517	\$1,487	\$1,734	\$1,982
2015	\$226.70	\$214.00	\$203.27	\$180.57	\$206.14	\$1,134	\$2,275	\$2,654	\$3,033
2016	\$141.50	\$127.09	\$137.90	\$145.34	\$137.96	\$759	\$1,701	\$1,984	\$2,267
2017	\$166.45	\$166.73	\$171.06	\$171.18	\$168.86	\$929	\$1,138	\$1,328	\$1,518
2018	\$171.10	\$171.06	\$166.06	\$166.04	\$168.57	\$927	\$1,393	\$1,625	\$1,857
2019							\$1,391	\$1,622	\$1,854
					Average for Years	\$918			



## Heifer Development Opportunities for Veterinarians

There is likely no better opportunity for expanding services to cow/calf producers than providing various levels of professional expertise for ranch heifer development programs. The lack of adoption of reproductive technologies for beef cattle, particularly with heifers, is mind boggling (see below). When the costs associated with these technologies are closely examined, it is clear cost is not the issue. Producer education, availability and convenience are the key drivers for producer acceptance and implementation.

Adoption of Reproductive Technology, NAHMS		
	Beef 2007-2008 %	Beef 2017 %
<b>Estrus Synchronization</b>	7.9	7.3
<b>Artificial Insemination</b>	7.6	11.6
<b>Palpation for Pregnancy</b>	18.0	19.3
<b>Blood Test for Pregnancy</b>	NA	3.5
<b>Ultrasound for Pregnancy</b>	2.2	8.8
<b>Pelvic Measurement</b>	3.9	6.6
<b>Body Condition Scoring</b>	14.3	13.6
<b>Semen Evaluation</b>	19.5	19.6
<b>Embryo Transfer</b>	1.6	3.0
Any of the Above	35%	

In addition to the producer options mentioned previously, there may be an opportunity to provide **Custom On-Ranch Heifer Development** services. This *“Turn-Key” Heifer Development and Breeding Service* might include the following:

1. Selection – weight, frame score, disposition, phenotype
2. Prebreeding exams – reproductive tract score, pelvic measurement, open confirmation
3. Reproductive disease immunization protocol
4. Parasite control
5. Synchronization protocol
6. AI Set-Up (2-3 trips)

7. Fixed-time AI
8. Pregnancy Diagnosis (Blood, rectal, ultrasound)
9. Fetal sexing
10. Records Management
11. Capturing and utilizing DNA information
12. Genomic counseling
13. Bull Breeding Soundness Exams

**Summary.** This information is written from the perspective of a producer/heifer developer (who happens to be a beef veterinarian). The perspective includes many different aspects of the beef industry including experience in rural private practice, academia, the corporate world and ranching.

When considering opportunities to expand cow/calf service in veterinary practice, heifer development seems to be “low hanging fruit.” Increased individual services, a package of services or even a “turnkey” On-Ranch Custom Heifer Development Service are potential growth opportunities in many practice environments. Progressive producers, with a better understanding of production costs, would likely be willing to invest considerably more financial resources to increase efficiency and allow increased opportunity to focus on other areas of the ranch enterprise. As stated earlier, producer education, availability and convenience are more important drivers than service costs.

**The key to adoption of expanded heifer development services is access and utilization of accurate financial and managerial accounting information.** When a producer truly has a good handle on detailed production cost information it is much easier to recognize the value of investment in competent veterinary services. In the sample budget provided, the entire breeding system costs are less than 7%. In numerous cow/calf budget examples, total veterinary costs rarely exceed 4%, including product and services. Producers with sound financial information can clearly visualize the cost effectiveness of their total health and reproductive technology investment.