

# Selecting and Sourcing Replacement Heifers

- 10 to 20% of a cowherd is replaced annually.
- Approximately 30% of weaned heifers are needed for replacement
- Additional heifers are needed for expansion



## Heifers Needed As a Percent of Cows to Calve

Death Loss	Conception Rate				
	86%	88%	90%	92%	94%
1.0%	23.5	21.2	19.1	17.2	15.5
2.0%	24.5	22.2	20.	18.1	16.3
3.0%	25.7	23.2	21.0	19.0	17.1

# Annual Cow Depreciation

(100 head cow herd example)

	Value	Replacement Rate		
		12%	15%	18%
Bred Heifer	1100	13,200	16,500	19,800
Cull Cow	625	7,500	9,375	11,250
Difference	475	5,700	7,125	8,550
Depreciation/cow		57.00	71.25	85.50

# Herd Replacement and Expansion vs Price Cycles

- Harlan Hughes –
  - Heifers retained at the high price times of the cattle cycle often are at maximum productivity through periods of low prices
  - Minimize herd replacement and culling at times of high calf prices and sell lots of calves
  - Rebuild and expand with cheap heifers to minimize herd debt and investment
- There can be good market opportunities for developing and breeding heifers in periods of herd expansion

# “Cowing up ... Cowing down”

- Heifer replacement strategies impact herd profitability
- Retaining the same dollar value of heifers instead of enough heifers to maintain a constant herd inventory projected to increase net worth 20% (ISU 1970-1999 simulation)
- 120 head herd fluctuated from 86 to 138 cows, purchased yearlings use excess forage

# Sources

- Retained Within Herd
  - Home Raised
  - Custom Development
- Purchased Bought In
  - Direct
  - Auction
  - Professional Services
  
  - Know background
  - generic



- **Conventional Wisdom**

- “You can’t buy them as good as you can raise them ... you are most likely getting somebody’s second cut ...it’s cheaper to raise your own, you know what you’ve got”

- **Industry Innovation**

- “customers specify breed(s), numbers, mature wt, service sire, and calving date...we market genetically superior, professionally developed replacement heifers”

# Reasons to Buy

- Manage breed makeup in crossbreeding
- Eliminate calving ease bulls
- Maximize use of resources for production
- Acquire greater genetic value
- Simplify herd management



# Heifer Value Example

Cow Weight	1200	1300
Years in Herd	8	7
Salvage value	540	585
Weaning Rate	94	92
Weaning Weight	550	530
Annual Feed Cost	220	230
Annual Vet Cost	15	20
Annual Labor Cost	25	25
Annual Overhead Cost	50	50
<b>Profit</b>	<b>\$120</b>	<b>\$70</b>
<b>Total Returns</b>	<b>\$1500</b>	<b>\$1075</b>
<b>Net Present Value</b>	<b>\$1097</b>	<b>\$803</b>

# Reasons to Raise

- Greater opportunity for information
- More accurate selections
- Greater Adaptation
- Bio-security
- Lower cost



# Cost of Raising Heifers

Opportunity cost of the Heifer	600
Winter Feeding (N-A)	150
Summer Grazing (M-O)	50
Fall Feeding (N)	25
Variable Expense	50
Fixed Expense	10
Death Loss	5
Interest	50
<b>Total</b>	<b>\$940</b>
Adjustment for Calls	10
Lost Opportunity Adjustment	90
<b>Adjusted Total</b>	<b>\$1040</b>



- **Adjustment For Culls**

- 25 heifers @ \$ 940 = \$23,500
- 2 culls @ \$817 = \$1,675
- \$21,865 / 23 = \$950

- **Lost Opportunity Adjustment**

- 100 cows x \$150 = \$15,000
- 115 cows x \$150 = \$17,250
- \$2,250 / 25 = \$90

# Selection/Cowherd Goals

- Easy to run, trouble free, cheap to feed, that breed in season, calve with few losses, and stay in the herd a long time
- Produce healthy heavy, calves with high market acceptance capable of making efficient feedlot gains and hanging a high grading value carcass

# Selection Specifications

Frame Score	4-6 (47")
Mature weight	1100-1300
BCS at breeding	5.7-6.0
Weight at breeding	720-850
BCS at calving	6
Weight at calving	1000-1150
1 <sup>st</sup> cycle conception	70%
Carcass weight	700-850
Carcass grade	70% CH YG2
Feedlot gain	3.5
Feedlot Conversion	<6.5

# Heifer Development

- Heifer that has adequate size, is bred early, and doesn't have major calving problems is likely to breed back earlier and consistently wean a heavier calf
- Recommended heifers weigh at least 65% of mature cow weight prior to breeding requiring target winter gains 1.25-1.75 lbs/day
- Heifers should be calf hood and prebreeding vaccinated, never implanted. Wormers and ionophores can reduce age and weight at puberty and feed cost
- Heifers should be mated to proven or high accuracy calving ease sires for a limited breeding season and fed to reach 85% of mature weight and BCS 6 at calving

# Timing the Breeding of Yearling Heifers

- Breed 1 month prior to mature cows
  - Wintering ADG 1.5
  - Winter feed costs \$66
  - Same pregnancy rate
  - Greater calving difficulty
  - Weaning wt 22 lbs heavier as 1<sup>st</sup> calvers
- Breed same date as mature cows
  - Wintering ADG 1.18
  - Winter feed costs \$55
  - Breeding wt 60% Mature weight
  - Lower mature weight 1003 vs 974
  - As 3 & 4 yr olds same reproduction and calf weight

# Target Breeding Weight

- Mature cow size 1300
- Target weight (65%) 845
- Current Weight 650
- Current Date 12/15
- Breeding Date 6/1
- Feeding period 160 d
- Gain needed 195
- Target ADG 1.3



# Lowering Target Weights ??

- 60% of Projected Mature Weight
  - 1.4 ADG
  - \$107 feed cost
  - 690 prebreeding wt
  - 939 2 yr weight
  - By age 4 all comparisons including cow weight were similar
- 55% of Projected Mature Weight
  - 1.1 ADG
  - \$85 feed cost
  - 637 prebreeding wt
  - 915 2 yr old weight
  - Calf birth date, weight, calving difficulty, weaning weight, preg rate were same

# Don't overlook maternal heterosis

- Crossbred Cow Heterosis
  - Calving Rate +6.6%
  - Calf survival +2.0%
  - Birth Weight +1.6%
  - Weaning Wt +4.2%
  - Longevity +38%
- Improvement in weight weaned / cow exposed
  - Sire breed rotation +16%
  - 4-breed composite +15%
  - 2-breed rotation +16%
  - Terminal x F1 +28%
  - Terminal x comp + 22%

# Biological Type

Breed	Size	Muscle	Marbling	Milk	Puberty
Hereford	3	2	3	2	3
Angus	3	2	4	3	2
Simmental	5	4	3	4	3
Limousin	3	5	1	1	4
Charolais	5	5	2	1	4
Gelbvieh	4	4	3	4	2

# Keys to Effective Genetic Selection

- A population of heifers sired by bulls which transmit desired maternal characteristics
- Information upon which to make individual heifer selection and culling decisions

# Traits of Economic Importance

- Low Cost Cows
  - Feed requirement
  - Longevity
  - Fertility
  - Calving ease
  - Health status
- High Value Calves
  - Weaning weight
  - Feedlot gain/conversion
  - Carcass marbling
  - Carcass yield
  - uniformity

# Genetic Trade Offs

- Female Trait
  - Age at puberty
  - Cow maintenance
  - Conception rate
- Match Cow to Forage Resources
- Steer Trait
  - Retail product yield
  - Post weaning growth
  - Fat thickness
- Match Sire to Market Targets



# Feed Requirement Comparison

Cow weight		1000	1200	1200	1400
Peak milk		20	20	25	25
Annual TDN		4219	5146	5339	5879
Feed Cost		\$169	\$206	\$214	\$235
Stocking Rate		121	100	96	88
Weaning Wt		455	550	575	625

Number of cows	100	88
Cow weight	1200	1400
Weaning weight	550	625
Calf price	1.10	1.05
Number of calves (.93%)	93	82
Feed Cost	20,600	20,600
Total Cost	43,205	40,769
Total Revenue	56,265	53,708
Profit	13,060 (\$130/cow)	12,939 (\$147/cow)
Breakeven Price	\$.84	\$.80
Finish weight	1175	1350
Cost of Gain (ADG 3.5, FE 8)	.534	.534
Days on Feed	176	207
Selling Price (70% CH YG3)	83.2	83.2
Profit	3,633 (\$39/calf)	6,542 (\$79/calf)
Overall Profit	16,693	19,481
Alternative Gain and Price	3.0	80
Profit	2,624 (\$28/calf)	2,999 (\$36/calf)
Overall Profit	15,684	15,938

start with the right ones, daughters of:

# Sires Strong In Maternal Traits

- Fertility

- High scoring Breeding Soundness Exam
- Uniform shaped testicles of average or better size
- Early sexual development and masculinity
- Dam has regular calving interval
- Favorable EPDs
  - Yearling scrotal circumference (genetic correlation .2)
  - Heifer Pregnancy Percent (heritability .57)

start with the right ones, daughters of:

# Sires Strong In Maternal Traits

- Feed Requirements and Efficiency
  - Moderate Frame and Mature Weight
  - Displays natural thickness and fleshing ability
  - Favorable EPDs
    - Daughter Mature Weight
    - Daughter ME Feed
    - Milk EPD
    - Yearling height

start with the right ones, daughters of:

# Sires Strong In Maternal Traits

- Calving Ease
  - Moderate birth weight
  - Born unassisted
  - Large yearling pelvic area
  - Favorable EPDs
    - Birth Weight
    - Maternal Birth Weight
    - Maternal Calving Ease



start with the right ones, daughters of:

# Sires Strong In Maternal Traits

- Weaning Weight
  - Display good early growth and weaning weight
  - Favorable EPDs
    - Maternal weaning weight
    - Maternal Milk
    - Weaning weight

start with the right ones, daughters of:

# Sires Strong In Maternal Traits

- Longevity
  - Good feet and leg structure and walks freely
  - Dam and daughters have good udders
  - Pleasant disposition, not up headed or mean
  - Favorable EPDs
    - Stayability
    - Disposition

complete the package with daughters of:  
**Sires That Add Value**

- **Efficient Feedlot Gain**
  - Good yearling weight and post weaning ADG
  - Favorable EPDs
    - Yearling Weight
    - \$Feedlot Index
    - \$Terminal Index



complete the package with daughters of:

# Sires That Add Value

- High Value Carcass
  - Display Natural thickness and muscle
  - Favorable EPDs
    - Ribeye Area
    - Fat Thickness
    - Carcass Weight
    - Percent Retail Product
    - Marbling (Intramuscular Fat)
    - \$Grid Value
  - DNA Genetic Markers



# Genetic Strategies

- Best Compromise
- “Curve Benders”
- Terminal x Maternal



# Select & cull Heifers for Maternal Traits

- Fertility
  - Early born
  - Yearling weight, BCS, and Repro Tract Score
  - Early breeding date
  - Herd health, culling management, implant history
- Feed Requirement and Efficiency
  - Moderate frame
  - Spring and Fall Body Condition Score
  - Yearling Ultrasound Fat Thickness

# Select & cull Heifers for Maternal Traits

- Longevity

- Feet and leg structure
- Disposition
- Age of dam
- Breeding date and BCS



- Calving Ease

- Moderate birth weight and Calving Ease Score
- Pelvic area
- Service Sire BW & CE EPDs

# Select & cull Heifers for Maternal Traits

- Weaning Weight
  - Weaning Weight
  - Breeding Date
  - Creep/nutrition management
- Uniformity
  - Breed makeup
  - Visual type
  - Calving date



# Select Heifers that add Value

- Feedlot Growth
  - Yearling weight
  - Post wean ADG
  - Frame score
- Carcass Value
  - Yearling ultrasound
    - Intramuscular fat
    - Ribeye area
    - Fat thickness
  - Sib data
  - Muscle score



# Source – Biosecurity

- Individual Health History
  - Treatments
    - Scours, BRD
  - Vaccinations
    - IBR, BVD, Lepto, Vibrio, Brucellosis, etc...
  - Testing
    - BVD PI ear test (5-20/hd)
- Herd (of origin) Health Status
  - Testing
  - Diagnosis
    - Johnnes
- Isolation

Selection and  
management of herd  
replacements is  
extremely important

Decisions on heifers  
retained or purchased  
will impact herd  
profitability for the next  
decade

