



Heifer and Young Female Management

UNIVERSITY OF
Nebraska
Lincoln

UNIVERSITY OF
Nebraska
Lincoln

Goals of a Replacement Heifer Program

- ⇒ Remains in cow herd for a long time
 - Heifers are structurally correct
 - Fit resources of operation
 - Mature weight and milk production
- ⇒ High percentage cycling 3 weeks before the breeding season and a high percentage pregnant early in the breeding season
- ⇒ Weans an acceptable calf
 - Carcass or as a replacement heifer
- ⇒ Pregnant during the 2nd breeding season

Selecting Replacement Heifers: Cull daughters of "Bad Marked" Cows

- ✓ Cows that need help calving
- ✓ Cows that calve late in the calving season
- ✓ Cows that fail to wean a calf
- ✓ Cows that have big teats - calf needs help nursing
- ✓ Cows that wean a light calf
- ✓ Cows that have an attitude problem
- ✓ Cows that don't regain body condition after weaning

UNIVERSITY OF
Nebraska
Lincoln

Selecting Replacement Heifers:

- Delay selection as long as possible:
 - Weaning
 - Sell mis-fits
 - Young
 - Small - establish a minimum weight
 - » Actual weight not Adjusted 205 Weight
 - Consider keeping heifers from "older" cows

UNIVERSITY OF
Nebraska
Lincoln

Selecting Replacement Heifer from Older Cows:

- Indirectly are selecting for:
 - Fertility
 - Longevity/Soundness
 - Good udders/teats
 - Mothering ability
 - Temperament/Disposition
 - Efficiency - low production inputs
 - Calf quality
 - Soundness

UNIVERSITY OF
Nebraska
Lincoln

UNIVERSITY OF
Nebraska
Lincoln

Heifer Development Costs (does not include heifer value at weaning)

State	Total Costs	Cost per day
Iowa	\$405.62	\$1.12
Nebraska	\$421.21	\$1.17
Missouri	\$394.39	\$1.39
Kansas	\$321.44	\$1.32

UNIVERSITY OF
Nebraska
Lincoln

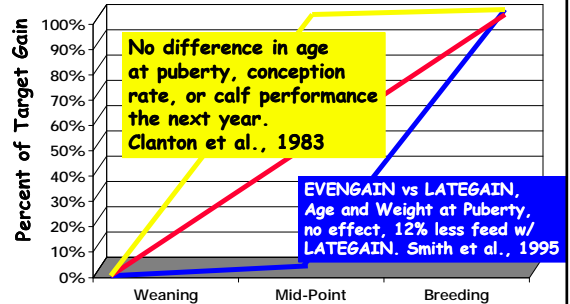
Factors that Effect Attainment of Puberty

- Breed
- Age
- Weight
 - Target Weight



University of
Nebraska
Lincoln

Effect of Time of Gain From Weaning to Breeding on Heifer Performance



Target Weight Concept



- Weigh heifers at weaning
- Est. weight at maturity
 - 2/3 of mature weight
- Establish target weight
 - 2/3 of mature weight
- Days to get to target weight
 - 3 weeks before the start of the breeding season
- Determine ADG

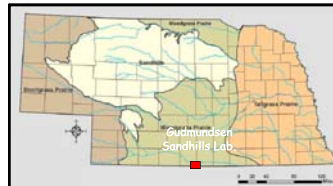
Implementation of Target Weight Concept

- Weaned November 1
- Average weight of selected heifers
 - 550 lb
- Est. mature weight
 - 1200 lb
- Beginning of breeding season
 - May 21
- Target Weight
 - $2/3 \times 1200 = 800$ lb
- Weight gain needed
 - $800 \text{ lb} - 550 \text{ lb} = 250$ lb
- Days to start of breeding season
 - 201 days
- Days to target weight
 - $201 \text{ day} - 21 \text{ day} = 179$ days
- ADG
 - $250 \text{ lb} / 179 \text{ day} = 1.39$

Feeding to a "Target Weight"

Item	% of Mature Wt @ breeding	
	55%	65%
Pre-breeding wt	600	683
Conception (21d)	30	62
Calving wt.	834	897
Calf birth wt.	71	73
Calving difficulty, %	52	29
Calf death loss, %	6	5
2nd Pregnancy Rate, %	85	93

Patterson et al., 1987



Nebraska 2002 Deutscher et al.

- **MARC II Heifers** (Gelbvieh, Simmental, Angus, Hereford)
 - 80 heifers per year
 - 3 years
 - Followed females through 4th pregnancy
- **Pre-breeding Target Weight 53% & 57%**
 - 1st winter ADG 1.1 & 1.4
 - 45 day breeding season
- **2nd winter, meadow re-growth, hay & supp.**



What is the appropriate Target Weight??

<u>% Mature Weight</u>	<u>53</u>	<u>58</u>
Pregnancy Rate -1 st	92	88
-2 nd	91	91
-3 rd	94	92
-4 th	96	96



Developing heifers to 53 vs 58% of mature weight:

- **No differences in pregnancy rate**
- **No differences in calf production**
- **Decreased mature weight through 4th pregnancy diagnosis**
- **Decreased costs \$22/head**



Developing Heifers to Less Than 2/3 of Their Mature Weight Prior to First Breeding

- **Breed composition of heifers**
 - MARC II (Gelbvieh, Simmental, Angus, Hereford) x Husker Red
- **Intensive System**
 - Heifer developed to 55% of mature weight prior to 1st breeding
- **Relaxed System**
 - Heifer developed to 50% of mature weight prior to 1st breeding
- **Mature weight = 1200 lb**



Developing heifers to lower target weights

	RLX	INT
Beginning Wt	504	504
Winter ADG, lb	0.75	1.20
Prebreeding Wt, lb	609	678
Prebreeding BCS	5.2	5.7
Prebreeding % of mature weight	50.9	56.5
% cyclic @ start of BS	34.9	52.1
Pregnancy Test Wt, lb	825	845
Pregnancy Test BCS	5.6	5.9
Pregnancy rate, %	87.2	89.8

45 day breeding season for INT, 60 day BS for RLX

Developing heifers to lower target weights

	RLX	INT
Pre-calving wt., lb	953	988
Pre-calving BCS	5.3	5.4
Calf birth date, Julian da	77	70
Calf B. wt., lb	73	73
Calving rate, %	84.5	89.1
Calved w/n 45 days	76.1	87.4
Calving difficulty, %	31.2	24.7
Calf W. Wt. lb	427	438
Weaning rate, %	81.0	84.0

Calving rate = % heifers exposed that calved.

Weaning rate = % heifers exposed during initial BS that weaned a calf.

Developing heifers to lower target weights

	RLX	INT
Wt. @ 2 nd pregnancy diagnosis	917	948
BCS @ 2 nd pregnancy diagnosis	5.1	5.2
Pregnancy rate, %	92.4	93.8
2-yr-old retention, %	75.6	79.1
Net cost per bred heifer, \$	577	601
Net cost per pregnant 2-yr-old cow, \$	577	594

Considerations if you decide to under-develop replacement heifers:

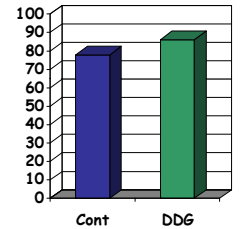
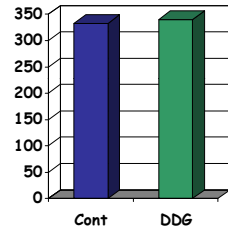
- If you want to maintain the number of females in the cow herd - protect yourself against high number of open heifers.
 - Keep back more heifers
 - Increase the length of the breeding season
 - 45 day minimum - may 60 day
- Preg check and cull late breeders

Developing Heifers in Dry-lot Using High UIP Diets



- 2-year experiment
- Dalbey and Mead
- 2 treatments
 - N = 158/trt
 - DDGS - fed @ .60% b.wt DM basis
 - Control
 - ISO:
 - » Caloric
 - » Nitrogenous
 - » P
 - » Fat = same fat used
- Heifers sync - 2 PGF
 - » Bred on Heat

Results - Reproductive Performance

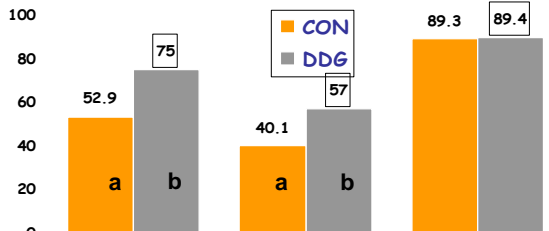


Age at Puberty, days

% Pubertal Prior to PGF

Results

Reproductive Performance



A.I. Conception Rate
a,b P < 0.003

A.I. Pregnancy Rate

Final Pregnancy Rate

Nutritional Management of 1st Calvers After Calving



- Repairing Reproductive Tract
- Lactating
- Growth
- Rations/Diets
 - Usually adequate on Protein
 - Usually Deficient on Energy

Influence of Body Condition Score of Heifers at Calving on Calf Birth Wt., Calving Difficulty, and Rebreeding

Item	Body Condition Score		
	4	5	6
Birth Weight, lb			
Year 1	68	66	68
Year 2	60	68	71
Dystocia Score			
1 - 4	1.2	1.4	1.3
% Assisted at calving	33	32	35
Percent Pregnant (with 2 nd calf)	65	78	89

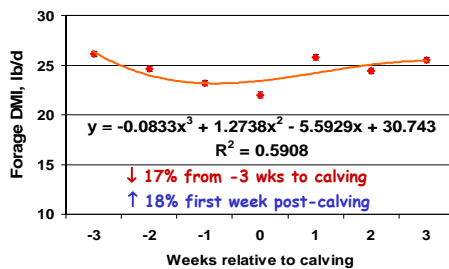
Nutrient Requirements

1100 lb Cow Heifer

	CP lb (%)	TDN lb (%)	CP lb (%)	TDN lb (%)
Mid-Gest	1.4 (7.0)	9.5 (49)	1.4 (8.1)	11.0 (55)
Late-Gest	1.6 (8.0)	11.3 (54)	1.5 (8.5)	11.3 (57)
Lactation	2.0 (9.5)	12.1 (56)	2.0 (10.4)	12.0 (60)

1984 NRC

Forage Dry Matter Intake of 1st-Calf-Heifers



Loy et al, 2004 Beef Report
 Intake changed cubically ($P = 0.03$) with respect to calving

Example Diet: Gestating 1-2 Year-Old Fed to Gain .5 per day (+ fetal Gain)

Feed	Lb Per Head per Day "as fed"
Hay	17.0
Alfalfa	8.5
Total	25.5

22.5 lb DM intake, 55% TDN, 10.2% CP, MP 169g/d, DIP 147 g/d, Mineral/Vitamin free choice

Example Diet: Lactating 2-Year-Old, Average Milk, Fed .5 ADG

Feed	Lb Per Head per Day "as fed"	
Alfalfa	12.0	00
Hay	12.0	24
Corn	4.5	00
DDGS	00.0	4.5
Total	28.5	28.5

25.3lb DM intake, 62% TDN, 10.8% CP
 Mineral/Vitamin free choice

Nutritional Management of Young Cow

Feed costs can be high

Get condition on pre-calving

- Consider crop residues early in program
- Consider dormant range/pasture plus supplement

Energy needs must be met

- Post-calving
- Grain or grain by-products in rations

