

### Heifer and Bull Development for the Gulf Coast



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### Theorem of the 7 P's

- **Prior**
- **Proper**
- **Preparation**
- **Prevents**
- **Poor**
- **Production**
- **Performance**



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### Why Develop / Manage Replacement Heifers /Bulls

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|---|---|
| <ul style="list-style-type: none"> <li>• <b>Heifers</b> <ul style="list-style-type: none"> <li>- Maintain cow herd</li> <li>- Improve / alter cow herd genetic base</li> <li>- Closed herd</li> <li>- Favorable \$\$ compared to purchased</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>• <b>Bulls</b> <ul style="list-style-type: none"> <li>- Alter the genetic makeup of calf crop</li> <li>- Adapt to local environment</li> <li>- Adapt to change in diet</li> <li>- Preparation to do their job</li> </ul> </li> </ul> |
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## Defining the Situation

- What is the overall objective of the development program
  - Move a young animal through the growth process to ultimately be introduced into the productive herd
- *You have to know where you want to go before you can get there.*



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## Implications of Successful Development

- Lifetime production is greater when first calving at 2 yrs compared to 3 yrs
- Heifers are cycling prior to initiation of breeding
- BW and BW gain are critical to initiation of estrus cycles
- Majority of factors related to heifer reproduction performance is influenced by management (nutrition)



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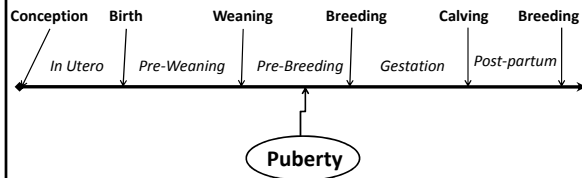
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## Periods of Nutritional Importance



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### Puberty and Replacement Heifers

- Early puberty is key factor in getting heifer bred
- Fertility (breeding success) 21% lower when bred at pubertal estrus compared to 3<sup>rd</sup> estrus
- Heifers need to be pubertal 1-3 months before initiation of breeding
- Age at initiation of estrus cycles is dependant on BW gain from birth to puberty




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### Target Weight Concept

- Weight is the main driver of attaining puberty
  - Age is permissive
  - Age interacts with BW
- Target BW = ≈65% mature BW at the start of breeding season
  - 1,300 mature = 845 lb at breeding
  - 1,200 mature = 780 lb
  - 1,100 mature = 715 lb




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### Reaching Target Bodyweight

Mature Wt, lb	Target Wt, lb	Weaning Wt, lb	# of Days	Required ADG, lb/d
1,200	780	500	165	1.70
1,200	780	550	165	1.39
1,200	780	600	165	1.09

- Older, heavier heifers more likely to achieve target BW
- Gain requires feed (energy) which requires inputs
- Management schemes to reach target BW
  - Constant
  - Low-High, High-Low
  - Don't short protein




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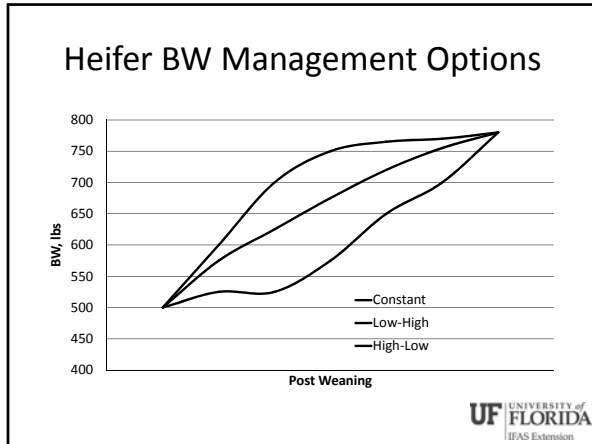
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### Feed strategies

- High quality forages
  - Winter Annuals
  - Conserved forage
- Medium quality forages
  - Supplemental energy/protein
    - Commodity feeds
- Mixed rations

*Cattle with Greatest Requirements Need Greatest Quality Feeds*

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IFAS Extension

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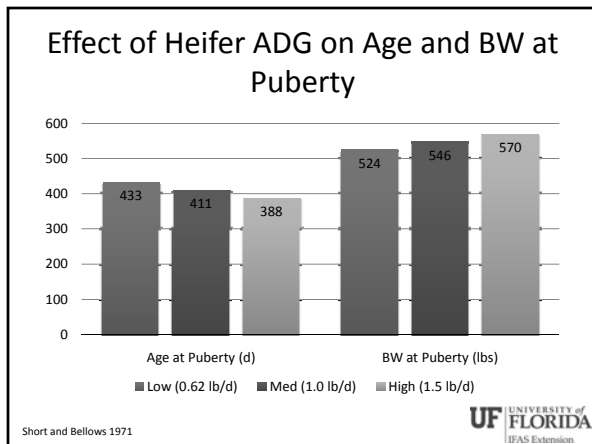
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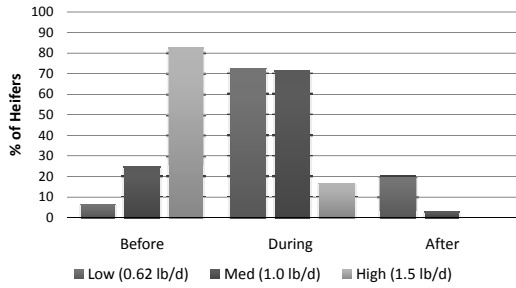
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### Effect of Heifer ADG on Expression of Estrus During 60-d Breeding Season



Short and Bellows 1971




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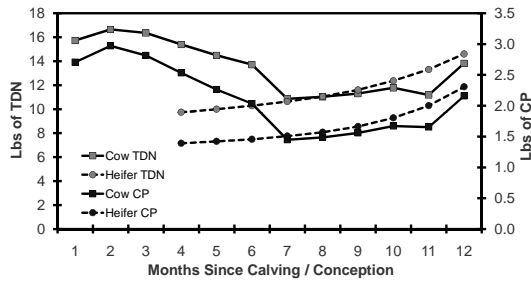
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### Energy/Protein Requirement Cycles in Beef Cows




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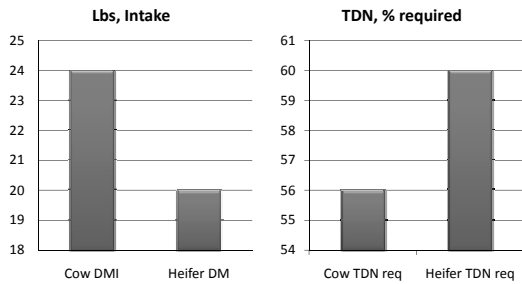
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### Comparison of Cow vs Heifer Energy Requirement



1,200 lb mature BW, 1 month prior to calving




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### Replacement Heifer Nutrient Requirements

Body Weight, lb	ADG, lb/d	Dry Matter Intake, lb/d	TDN, % of DM	CP, % DM
500	0.5	11.0	56.0	8.5
	1.0	11.8	62.0	9.4
	1.5	12.1	68.5	10.3
	2.0	11.8	77.0	11.4
600	0.5	12.6	56.0	8.1
	1.0	13.5	62.0	8.8
	1.5	13.8	68.5	9.5
	2.0	13.5	77.0	10.4
700	0.5	14.1	56.0	7.9
	1.0	15.1	62.0	8.4
	1.5	15.5	68.5	9.0
	2.0	15.2	77.0	9.6

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### Developing the Bull

- Bulls contribute ½ of the genetic potential for the cow herd
- Development of bulls to reach puberty and service age is critical
- Management of purchased bulls to ensure productivity is vital
- *Bulls are often the forgotten nutritional group*




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### Growing Bull Nutrient Requirements

Body Weight, lb	ADG, lb/d	Dry Matter Intake, lb/d	TDN, % of DM	CP, % DM
500	1.0	12.3	56.0	9.8
	2.0	13.2	62.5	11.8
	3.0	13.6	70.5	14.0
	4.0	12.0	86.0	17.5
700	1.0	15.9	56.0	8.8
	2.0	17.0	62.5	10.2
	3.0	17.5	70.5	11.7
	4.0	15.5	86.0	14.1
900	1.0	19.2	56.0	8.3
	2.0	20.6	62.5	9.2
	3.0	21.1	70.5	10.3
	4.0	18.7	86.0	12.1

large frame bull calves

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### Develop / Maintenance Bull Nutrient Requirements

Body Weight, lb	ADG, lb/d	Dry Matter Intake, lb/d	TDN, % of DM	CP, % DM
1,000	1.0	20.7	56.0	8.1
	2.0	22.3	62.5	8.9
	3.0	22.8	70.5	9.7
	4.0	20.2	86.0	11.3
1,100	1.0	22.3	56.0	7.9
	2.0	23.9	62.5	8.6
	3.0	24.5	70.5	9.3
	4.0	21.7	86.0	10.7

large frame bull calves




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### Feeding the Growing Bull

- Feed to reach genetic growth potential
- Evaluation of growth potential of offspring
- High level of growth = high diet energy/protein
- Appropriate feedstuffs
  - Energy
  - Protein
  - Roughage




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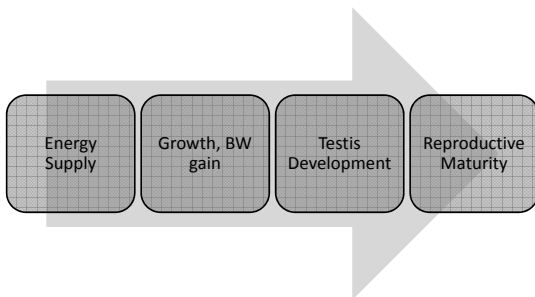
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### Progress of Bull Productive Development




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### Diet Considerations for Bulls

**Growth / Development**

- High Energy
- Concentrate based
- Low-Minimal Roughage
- Free Choice / Program Fed
- Minimal Physical Activity
- Encourages Maximal Growth and Overall Condition
- Bull Test Diet

**Maintenance / Function**

- Generally similar to Cow Ration
- High Roughage / Grazing
- Minimal Concentrate
- High Physical Demand
- Management Opportunity to Transition from Development to Herd Status
- Plan Ahead



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### Final Considerations For Development

- Feed to meet nutritional requirements
- Energy drives growth rate
- Lack of protein has long term consequences
- Heifer target 65-70% Mature weight at breeding
- Bulls target  $\geq 3.0$  lb/d ADG during growth/develop



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### Final Considerations For Development

- This period sets up the heifer/bull for long-term success or early failure
- Expensive to develop cattle – imperative to do it correctly



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