

Investing in the Future: Heifer Development for Longevity

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Time Investment

Time Period	Days
Sixty day breeding season	60
Gestation period for brood cow	285
Birth to weaning	210
Weaning to breeding	240
Gestation period for heifer	280
Calving until re-breeding	80
Rebreeding until pregnancy exam	45
Total time in days	1200 Days
Total time in months	40 Months (3+ Years)

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Financial Investment

	Retained	Purchased
Deferred Revenue*	\$1,015	-----
Development†	\$600	-----
Opportunity Cost‡	\$320	-----
Purchase Price ^A	-----	\$2,500
Total	\$1,935	\$2,000

* 700 pound heifer at \$145/cwt.

† Includes nutrition, breeding, labor and death loss.

‡ Revenue lost from running three fewer cows with the resources used to develop five heifers.

^A Estimated average purchase price for heavy-bred, superior genetic replacements in 2017

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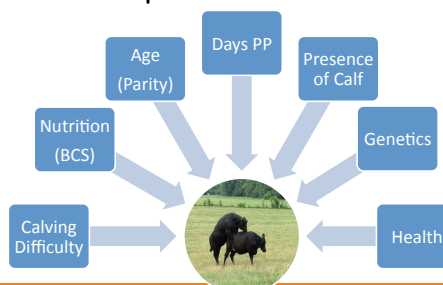
Selection Criteria

- Pregnancy
- Phenotypic
 - Performance
 - Structural soundness
 - Pelvic area measure
 - Tract score
- Genetic Potential
 - Dam performance
 - Sib or half-sib performance
 - EPDs
 - Genomics
 - Carcass Ultrasound

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Factors Influencing Length of Postpartum Anestrus



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Objectives

- Breed early in the first breeding season
- Minimize calving difficulties
- Wean acceptable calves
- Breed early in the second breeding season
- Optimize profit
- Improve genetics

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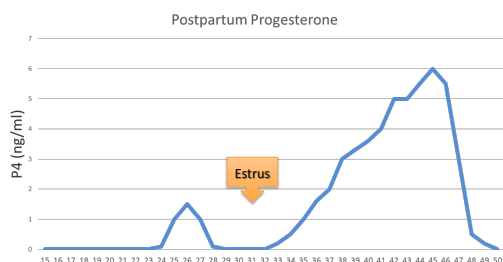
Factors Influencing Puberty

- Age
 - Minimum age needs to be reached before heifers will start to cycle
 - Average age = 12 – 24 months
- Weight
 - “Target Weight” (moving target)
- Breed type
- Heterosis

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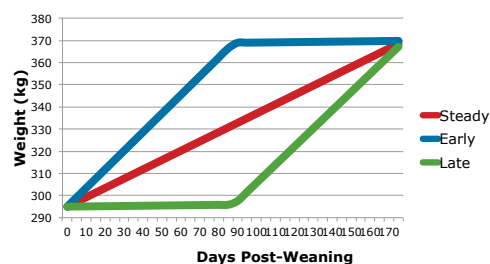
Prepubertal Anestrus



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Nutritional Development



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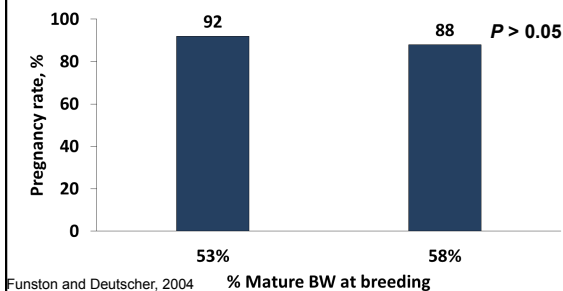
Nutritional Development

- Target Body Weight (1960s-1980s)
- Guidelines for replacement heifers to reach 60 to 65% of their mature BW by breeding (Review by Patterson et al., 1992)
- Lighter target BW at breeding reduced development costs while not impairing reproductive performance (Funston and Deutscher, 2004; Larson et al., 2011; Roberts et al., 2009; Funston and Larson, 2011; Mulliniks et al., 2013)

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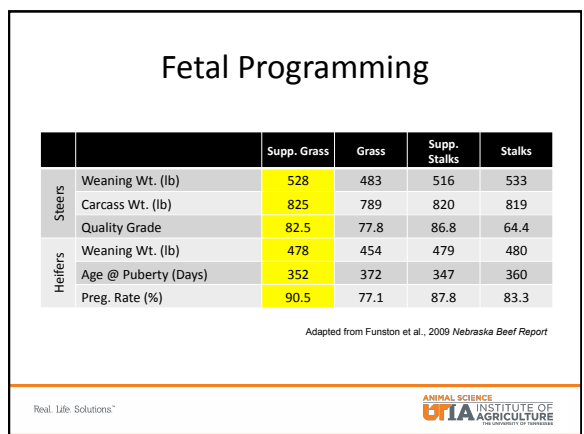
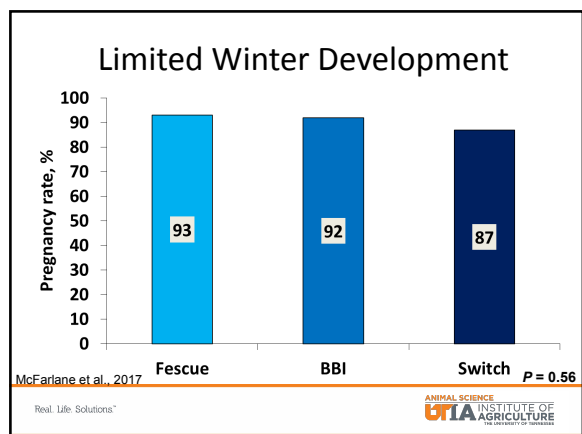
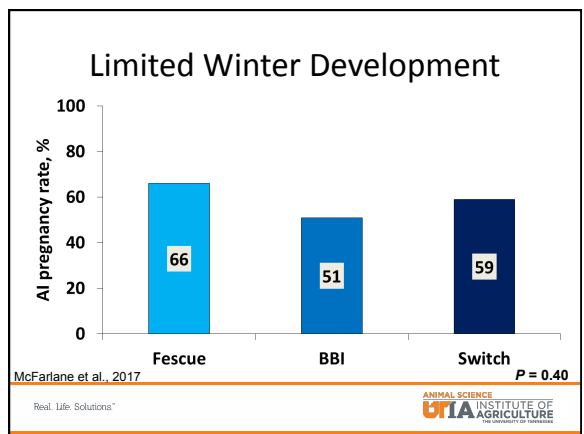
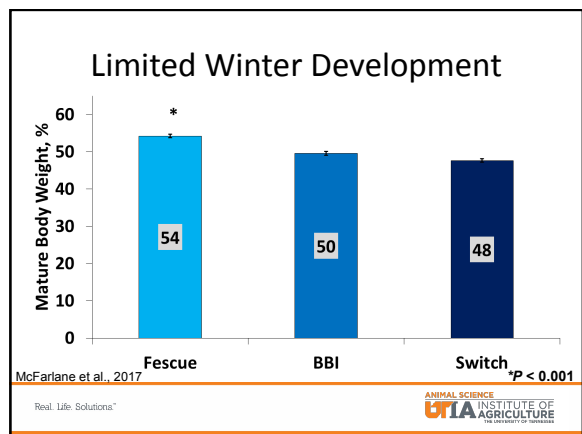
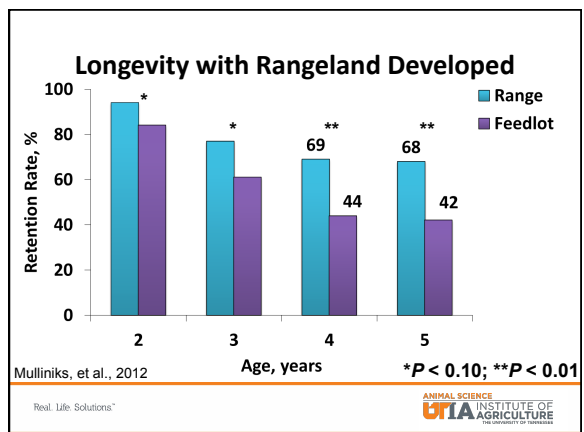
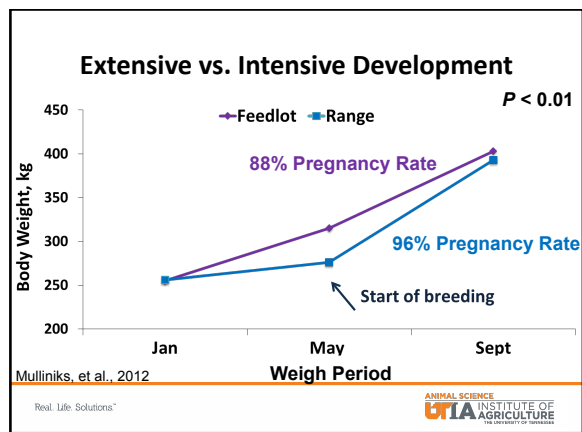
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Lower Mature BW %



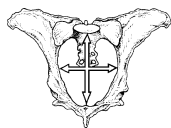
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Reproductive Selection

- One month before breeding season
 - Perform pelvic area measurements
 - Cull heifers with unacceptable pelvic area
 - What is an unacceptable pelvic area?

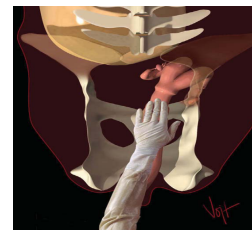


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Reproductive Selection

- One month before breeding season
 - Reproductive tract scores (RTS)
 - Cull heifers that are sexually immature



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Reproductive Management

- 1 month before breeding season
 - Vaccinations and parasite control in order
 - Develop synchronization system (use some type of progestagen)



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Reproductive Management

- Post – breeding
 - Pregnancy check
 - Cull open and late-bred heifers until replacement number is reached



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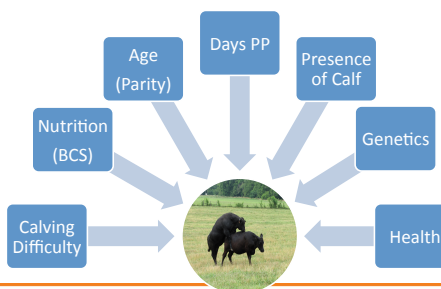
Post Breeding Management

- Heifers should weigh approximately 85 to 90% of mature weight at calving
 - Usually requires 0.5 lb/day until calving*
 - Maintain BCS of 6
- More critical analysis of selection traits
- Give special attention during calving
- Maintain BCS 5 until re-breeding

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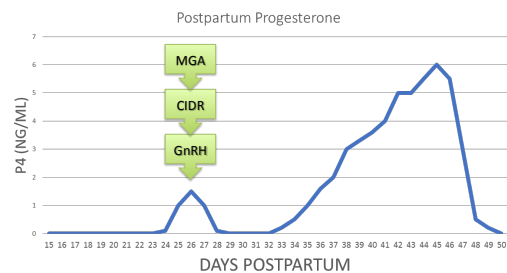
Factors That Control Postpartum Anestrus



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First Postpartum Anestrus



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Considerations for a "Systems" approach

THE BIG PICTURE

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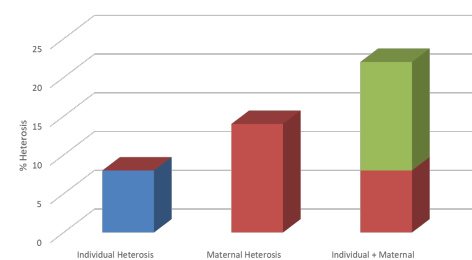
Crossbreeding

Trait	Heritability	Heterosis
Reproduction	Low	High
Growth	Moderate	Moderate
Carcass	High	Low

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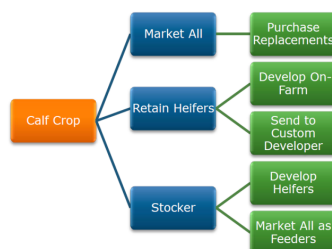
Heterosis for lbs. Calf/Cow



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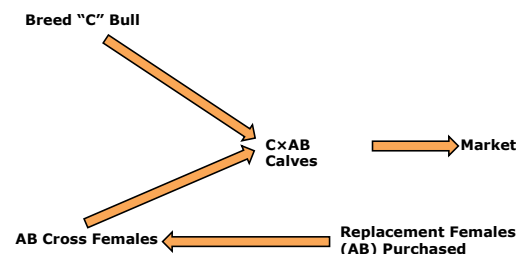
Systems Scenarios



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Systems Scenarios



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Summary

- Select and manage for early puberty
- Pregnancy check early
- Monitor during calving
- Maintain BCS after calving
- A bad slice or hook with your driver makes the short game more difficult

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