

Strategies for Forage-Based Heifer Development

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**What is the goal of any
replacement heifer
development program?**



Introduction

- **Most expensive segments of cow-calf industry**
- **Increased productivity when a high % of heifers become pregnant early in the breeding season**
- **Heifer management should not be over looked**

Introduction

- Heifers calving at 2 years have increased lifetime productivity
- Must be bred by 15 months
 - Puberty 1 month prior to breeding
 - Heifers bred 1 month before cows
- Heifers must be pubertal by 11 to 13 months of age

Challenges

- ***Bos Indicus* breeding**
 - Slower maturing and older at puberty
- **Higher nutritional requirements**



Challenges

- **Forages**
 - Lower CP and TDN
- **Bahiagrass**
 - 8.9% CP and 54% TDN
- **Fescue**
 - 15% CP and 61% TDN



***Forage Quality Determines
Performance and
Supplementation***



Gain	Forage #1 CP= 6% TDN= 47%		Forage #2 CP= 9% TDN= 54%		Forage #3 CP= 12% TDN= 58%	
	Supp. (lb)	CP %	Supp. (lb)	CP %	Supp. (lb)	CP %
1.0 lb/d	6	13.8	4	10.3	2	4.5
1.5 lb/d	9	13.4	7	12.3	5	8.0

Forage Quality

Increasing the quality of forage available to heifers will decrease supplement costs

Forage Quality

- **Proper pasture management**
- **Winter/summer annuals**
- **Proper hay field management**
- **Proper hay harvesting**

Round Bale Silage



Round Bale Silage

- **Allows for timely harvest of forage**
 - Forages are stored at peak nutrient value
- **Cost of machine and wrap**



Round Bale Silage

- **Hay only vs. Hay/RBS**
 - Hay/RBS had 2 more cuttings
 - 55 tons more dry matter
- **Hay only- CP= 10.1% TDN= 53.8%**
- **Hay/RBS- CP= 12.9% TDN= 57.1%**

Round Bale Silage

- Investment in wrap and wrapper pays for itself in increased forage quality
- Wrapping forage will not improve the quality

Bad Hay is Bad Hay

Alternative Forages

- Rye, Ryegrass, Oats, and Wheat



- Corn or Sorghum Silage



Forage Testing

- Know the nutritive value of the forage
- Test all forages
- Cost is minimal
- Costs recovered in animal performance and supplement savings



Forage Rules

- **Always provide heifers the best forage available**
 - Increased gains with less supplement
 - Decreased supplement costs
 - Decreased overall costs



Supplementation



Energy Supplements

- Usually the limiting nutrient
- Feed high TDN supplements
- Grains can lower rumen pH
 - Decrease forage digestibility
- By-products have comparable TDN but will not decrease rumen pH
 - Cheaper



Energy Supplements

- **Fat supplementation**
 - Energy dense
 - Limit to less than 5% DM intake
- **Nutritionally challenged heifers may benefit reproductively**



Protein Supplements

- Increase intake of low quality forage
- Increased performance from natural protein sources vs. non-protein nitrogen sources (urea)
- Protein is expensive



Minerals

- Feed or allow access to a complete mineral at all times





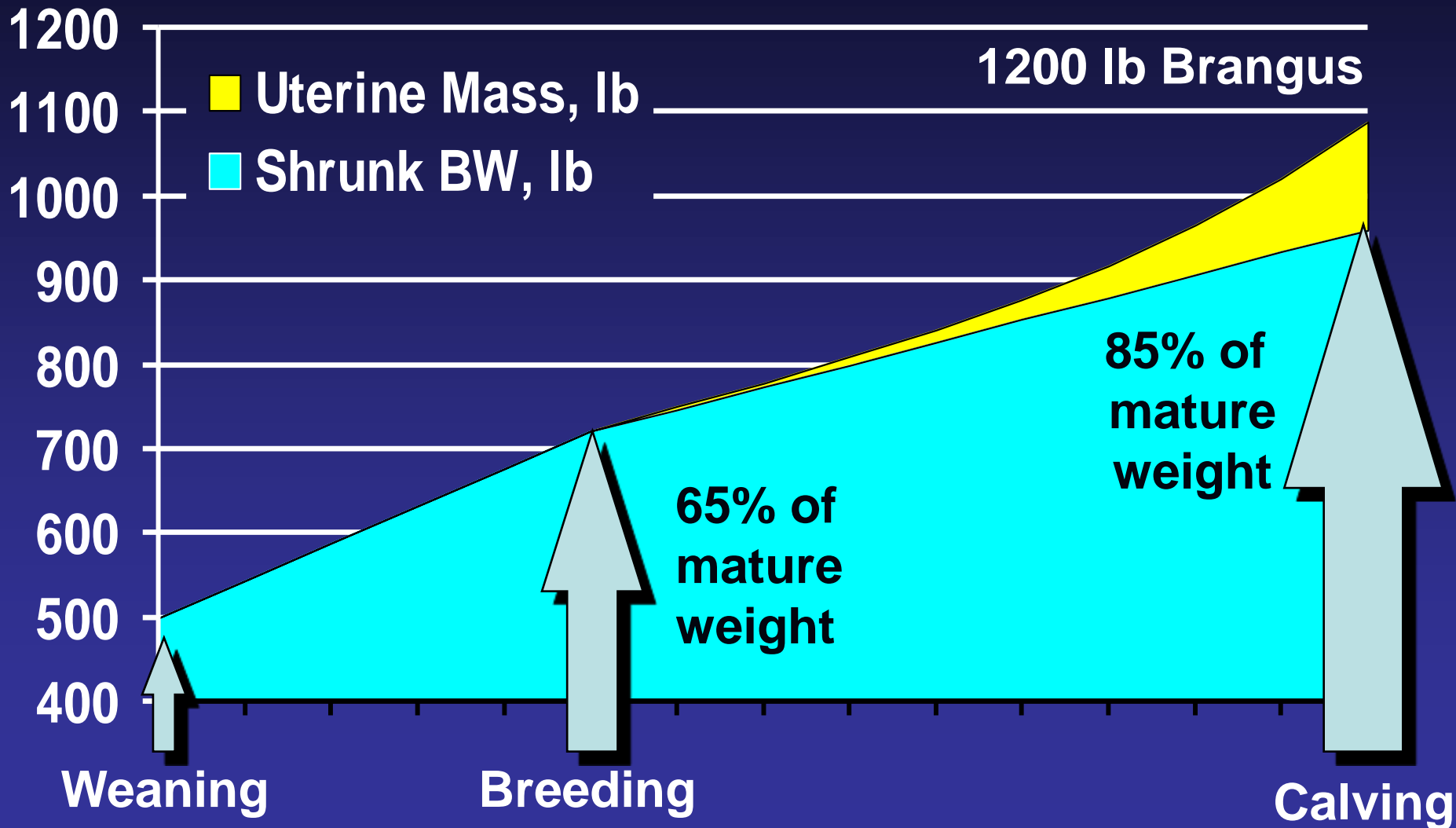
Management Programs



Management

- **Goal**
 - **Grow heifers to a point where the majority of heifers are pubertal and cycling at the start of the breeding system**

Body Weight Changes of the Replacement Heifer



Target Body Weight

- Heifer #1- mature wt.- 1100 lbs
 - Target weight @ breeding- 715 lbs
- Heifer #2- mature wt.- 1200 lbs
 - Target weight @ breeding- 780 lbs

Target Body Weight

- Weaned September 1
- Breeding starts March 15 (196 d)
- Both heifers weaned @ 500 lbs
- Target BW @ Breeding
 - Heifer #1- 715 lbs (1.10 lb/d)
 - Heifer #2- 780 lbs (1.43 lb/d)

Management

- **Choose a program and stick with it**
- **Ample supply of forage and supplement**
- **Alterations in diet can drastically effect performance**
- **If possible, weigh a set of heifers every 2 months to determine ADG**

Management

- Always manage heifers separate from the cow herd
 - Different nutrient requirements
 - Body size
- Group heifers by size if possible



Management

- **Constant weight gain**
 - Most common method
- **Heifers supplemented to gain continuously**
- **Easy**
- **Effect of supplementation interval?**
 - Possibly

Supplement Interval

- **Cooke et al. (2007)**
- **Ona, FL**
- ***Bos Indicus* cross heifers**
- **Grazing Bahigrass pasture**
- **45 d prior to breeding**
- **Fed equal amounts of low-starch, high-energy supplement**



Supplement Interval

- **ADG greater for daily-fed vs. 3-times per week**
 - 1.98 vs. 1.60 lb/d
- **Age at puberty was less and pregnancy rates were higher for daily-fed heifers**

Supplement Interval

- **Alachua, FL**
- **Angus and Brangus Heifers**
- **From after weaning to breeding**
 - 6 months
- **Access to Bermudagrass RBS**
- **Fed dried distillers grains**

Supplement Interval

- **ADG higher than predicted**
- **Similar for daily-fed and 3-times a week**
 - 1.85 and 1.83 lb/d
- **Daily-fed heifers had higher puberty rates at breeding**
 - 60% vs. 40 %

Supplement Interval

- **However, synchronized pregnancy rates were higher for 3-time a week heifers**
 - **57% vs. 43%**

Supplement Interval

- **Reasons for differences**
 - **Different supplements**
 - **Different forages**
 - **RBS had greater CP and TDN than bahigrass pasture**
 - **Different durations**

Programmed Feeding

- **Programmed Feeding**
 - **Slower rate of gain in the beginning followed by a faster rate of gain**
- **Compensatory gain**
- **Increased feed efficiency**
- **Decreased supplement cost**

Programmed Feeding

- **Weekley, 1991**
- ***Bos Indicus* cross heifers**
- **Drylot for 5 months**
- **2 groups**
 - **Even- 1.34 lb/d for the trial**
 - **Low-high- 1.17 lb/d for the first 3 months and 1.63 lb/d for the last 2 months**

Programmed Feeding

- **Even gain heifers reached puberty 30 d earlier**
- **However, pregnancy rates were similar between the two groups**

Programmed Feeding

- **Lynch, et al. (1997)**
- **2 year study**
- **Angus X Hereford heifers**
- **Drylot for 6 months**
- **2 groups**
 - **Even- 1.00 lb/d for the trial**
 - **Low-high- 0.25 lb/d for the first 4 months and 2.0 lb/d for the last 2 months**

Programmed Feeding

- **At breeding- frame score, BCS, and body weights the same both years**
- **Age at puberty**
 - **First year- Similar**
 - **Second year-Delayed in the low-high heifers by 3 weeks**
- **Similar pregnancy rates both years**
- **Low-high heifers more efficient**
 - **Consumed 12% and 2.5% less feed**

Programmed Feeding

- Possible management system for Florida
- No data on grazing/hay systems
- Currently working on this in our lab

Summary

- **Greatest investment for producers**
- **Heifers must be pubertal by 11 to 13 months of age**
- **Know target body weight of heifers and provide the appropriate level of nutrition to achieve it**

Forage Quality Determines Performance and Supplementation

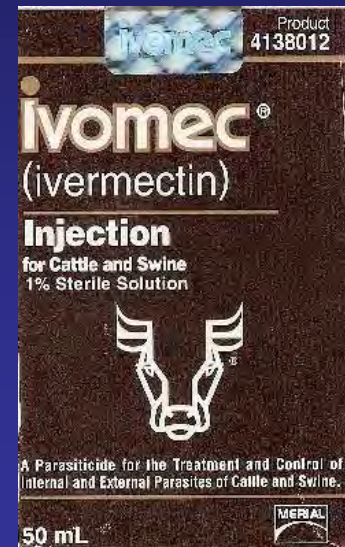
Questions?



Additional Management Tools

Deworming

- Deworm heifers
 - Reach puberty 2 to 3 weeks earlier
 - Improved conception rates (7%)



(Mejia et al, 1999; Purvis and Whittier, 1996; Larson et al, 1992)

Ionophores

- Antimicrobial compounds fed to improve feed efficiency
 - Alter the rumen microflora
- Monensin, lasalocid, laidlomycin



Ionophores

- **Purvis and Whittier (1996)**
 - Puberty reached 10 d earlier
 - 5% increase in conception rates
- **Mosely et al. (1997)**
 - Increased puberty rates by 40%
 - Increased conception rates by 7%