Building Efficiency Through Reproductive Management

Vitor Mercadante and Cliff Lamb

North Florida Research & Education Center
Recipe for a calf

+ =
Factors affecting fertility in beef females

- Postpartum anestrus
- Suckling stimulus
- Age
- Genetics
- Nutrition
- Body weight
- Body condition score
- Reproductive management
- Plane of nutrition
- Body composition
- Animal handling
Strategies to improve reproduction efficiency

- Breeding season
- Reproductive technologies
- Selection pressure
- Management
Establishing a Breeding Season

• Remove your bulls from the cows!!!
• When do you want your calves to be born?
  – Nutrition
  – Cow performance
  – Calf performance
  – Cattle Market
Establishing a Breeding Season

- 365 days is not a breeding season!
- Establish goals
  - 45-120 days
  - 10-15 days per year decrease
Breeding Season

- Management
- Selection pressure
- Culling cows
- Pregnancy diagnosis
- Breeding Soundness Exam
- More pregnant cows at the beginning of the breeding season
- More calves at the beginning of the calving season
Artificial Insemination

• Disease prevention
• Widespread selection of bulls
• Proven genetics
• Genetic selection of replacements heifers improves overall cowherd genetics
• Reduce costs associated with bull maintenance
• Uniformity
• Crossbreeding
Heat Detection

• AM-PM rule
• Early in the morning – AM
• Late in the evening – PM

Heat in AM → Breed in PM

Heat in PM → Breed in AM
Heat Detection

- Mucous from the vagina
- Swollen vulva
- Ruffled tail head
- Mud on the flank
- Excessive walking
- Vocalizing
- Not eating

STANDS TO BE MOUNTED
Estrus Synchronization

• Pharmacological control of the Estrus Cycle
• Fixed-Timed Artificial Insemination - TAI
• Advantages of TAI
  – Induction of cyclicity
  – No heat detection
  – Optimization of labor
  – Increase proportion of females exposed to AI
  – More females pregnant to AI in a shorter period
**TAI protocols for beef females**

### Beef Cow Protocols - 2014

**Heat Detection**
- Select Synch
- Heat detect & AI
  - Day 8 to 10

**Heat Detect & Time AI (TAI)**
- Select Synch & TAI
  - Day 5 to 7
- 72 - 84 hr after PG or GnrH at TAI

**Select Synch + CIDR**
- Heat detect & AI
  - Day 5 to 7
- 72 - 84 hr after PG or GnrH at TAI

**PG 6-day CIDR**
- Heat detect & AI
  - Days 0 to 3
- 72 - 84 hr after PG or GnrH at TAI

**Fixed Time AI (TAI)**
- 7-day CO-Synch + CIDR
  - Perform TAI at 54 ± 2 hr after PG or GnrH at TAI

**5-day CO-Synch + CIDR**
- Perform TAI at 54 ± 2 hr after CIDR removal with GnrH at TAI
  - Two injections of PG 8 ± 2 hr apart are required for this protocol.

---

### Beef Heifer Protocols - 2014

**Heat Detection**
- 1 Shot PG
  - Heat detect & AI
    - Day 5 to 7
    - 72 - 84 hr after PG or GnrH at TAI

**Heat Detect & Time AI (TAI)**
- Select Synch + CIDR & TAI
  - Day 5 to 7
  - 72 - 84 hr after PG or GnrH at TAI

**7-day CIDR-PG**
- Heat detect & AI
  - Days 0 to 3
  - 72 - 84 hr after PG or GnrH at TAI

**MGA-PG**
- Heat detect & AI
  - Days 0 to 3
  - 72 - 84 hr after PG or GnrH at TAI

**14-day CIDR-PG & TAI**
- Heat detect & AI
  - Days 0 to 3
  - 72 - 84 hr after PG or GnrH at TAI

---

**Fixed Time AI (TAI)**

**7-day CO-Synch + CIDR**
- Perform TAI at 54 ± 2 hr after PG or GnrH at TAI

**5-day CO-Synch + CIDR**
- Perform TAI at 54 ± 2 hr after CIDR removal with GnrH at TAI
  - Two injections of PG 8 ± 2 hr apart are required for this protocol.

---

**Long-term Protocols**

**MGA-PG**
- Heat detect & AI
  - Days 0 to 3

---

*The times listed for “Fixed-Time AI” should be considered as the approximate average time of insemination. This should be based on the number of heifers to inseminate, labor, and facilities.*

---

**Cytostar®, Fertast®, Fertag®, OvaCyt®, extraplus®, EstroPLAN®, In-Synch®, Louislys®, Pronex®, Pronex®**

---

www.beefrepro.unl.edu
Impact of TAI on Calving and Weaning

Control

n = 615

Natural mating

TAI

n = 582

CIDR

GnRH

PGF

TAI + GnRH

Natural mating
# Impact of TAI on Calving and Weaning

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Control</th>
<th>TAI</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of cows</td>
<td>615</td>
<td>582</td>
</tr>
<tr>
<td>Weaning rate, %</td>
<td>78</td>
<td>84</td>
</tr>
<tr>
<td>Weaning weight, lb</td>
<td>$387 \pm 8^a$</td>
<td>$425 \pm 8^b$</td>
</tr>
</tbody>
</table>

*ab* Means within row differ (P < 0.01)

(Rodgers et al., 2012)
Impact of TAI on Calving and Weaning

TAI

44.1% vs. 24.7%

(Rodgers, 2012)
Influence of Calving Period on Reproductive Longevity

(Cushman et al., 2012)
Influence of Calving Period on Weaning Weights

(Cushman et al., 2012)
Why folks choose not to TAI?

“Too many hassle factors...”

“Pregnancy rates to TAI are too low...”

• 40-60% pregnancy rates to TAI
• It is a process that will take time and commitment!
UF-NFREC Case Study
UF-NFREC Case Study

2009
- TAI heifers
- TAI cows
- TAI late calving cows
- TAI late, late calving cows
- Remove bulls

2010
- AI heifers
- AI cows
- AI late calving cows
- Remove bulls

2011
- AI heifers
- AI cows
- AI late calving cows
- Remove bulls
UF-NFREC Case Study

2012
- Al heifers
- Al cows
- Remove bulls

2013
- Al heifers
- Al cows
- Remove bulls
UF-NFREC Case Study

Percentage

Calving day

2006  2007  2008  2009  2010  2011  2012  2013
## UF-NFREC Case Study

### Breeding season pregnancy rates:

<table>
<thead>
<tr>
<th>Year</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breeding season length</td>
<td>120</td>
<td>120</td>
<td>110</td>
<td>88</td>
<td>80</td>
<td>75</td>
<td>70</td>
<td>72</td>
</tr>
<tr>
<td>Pregnancy rates</td>
<td>81%</td>
<td>86%</td>
<td>84%</td>
<td>86%</td>
<td>82%</td>
<td>94%</td>
<td>92%</td>
<td>93%</td>
</tr>
<tr>
<td>Mean calving day</td>
<td>79.2</td>
<td>80.9</td>
<td>59.2</td>
<td>56.2</td>
<td>53.7</td>
<td>47.2</td>
<td>39.5</td>
<td>38.7</td>
</tr>
</tbody>
</table>
## UF-NFREC Case Study

### Change in Calf Value:

<table>
<thead>
<tr>
<th>Year</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean calving day</td>
<td>79.2</td>
<td>80.9</td>
<td>59.2</td>
<td>56.2</td>
<td>53.7</td>
<td>47.2</td>
<td>39.5</td>
<td>38.7</td>
</tr>
<tr>
<td>Difference from 2006/2007</td>
<td>0</td>
<td>0</td>
<td>21.7</td>
<td>24.7</td>
<td>27.2</td>
<td>33.7</td>
<td>41.4</td>
<td>42.2</td>
</tr>
<tr>
<td>Per calf increase in value</td>
<td>0</td>
<td>0</td>
<td>$65</td>
<td>$74</td>
<td>$82</td>
<td>$101</td>
<td>$124</td>
<td>$127</td>
</tr>
<tr>
<td>Herd increase in value</td>
<td>0</td>
<td>0</td>
<td>$19,530</td>
<td>$22,230</td>
<td>$24,480</td>
<td>$30,330</td>
<td>$37,260</td>
<td>$37,980</td>
</tr>
</tbody>
</table>
A Facebook page for AI Cowculator with a star indicating 665 likes. The page includes a status update from a user named Pedro Levy mentioning an article written by Dr. Dubeux, the forage specialist at the NFREC.
Managing Reproductive Efficiency

• Nutrition
• Breeding season
• Breeding soundness exam
• Pregnancy diagnose
• Cull open cows
• Estrus synchronization – TAI

YOU DECIDE WHEN YOUR COWS GET PREGNANT!!
THANK YOU!

Cliff Lamb
University of Florida
3925 HWY 71
Marianna, FL 32446
850-394-9124
gclamb@ufl.edu

Vitor Mercadante
University of Florida
3925 HWY 71
Marianna, FL 32446
352-672-4061
vitor@ufl.edu
www.secattleadvisor.com

Beef Reproduction Task Force

www.beefrepro.unl.edu

www.edis.ifas.ufl.edu