Adapting Angus Cattle to Subtropical Climates

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Overview

• Typical commercial cow/calf herds are comprised of Brahman x British crossbreds.
• Significant percentage of herd sires are purchased outside Florida.
• Black Angus genetics are often imported from temperate regions.

Initial Research

• 125 embryos were derived from local (adapted) or outside (non-adapted) sources (n = 250 total).
• Embryos were transferred into Brahman x British crossbred cows over three consecutive years.
• From these transfers, a total of 81 live calves were weaned.
• Heifers and bulls evaluated through sexual maturity.
• Bulls evaluated as sires on Braford cowherd.


<table>
<thead>
<tr>
<th>Item</th>
<th>Local (Florida)</th>
<th>Outside (Kansas)</th>
<th>SEM</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Birth weight, lb</td>
<td>61</td>
<td>63</td>
<td>1.7</td>
<td>0.39</td>
</tr>
<tr>
<td>Weaning weight, lb</td>
<td>478</td>
<td>505</td>
<td>11.2</td>
<td>0.09</td>
</tr>
<tr>
<td>205 d adjusted, lb</td>
<td>364</td>
<td>386</td>
<td>7.1</td>
<td>0.03</td>
</tr>
<tr>
<td>Weight/d of age, lb</td>
<td>1.79</td>
<td>1.87</td>
<td>0.02</td>
<td>0.03</td>
</tr>
<tr>
<td>Hip height, cm</td>
<td>105</td>
<td>109</td>
<td>0.8</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td>Age at conception, d</td>
<td>550</td>
<td>454</td>
<td>17.2</td>
<td>0.02</td>
</tr>
</tbody>
</table>

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<tbody>
<tr>
<td>Average low, °C</td>
<td>38.55</td>
<td>38.41</td>
<td>0.11</td>
<td>0.36</td>
</tr>
<tr>
<td>Average high, °C</td>
<td>40.91</td>
<td>40.90</td>
<td>0.07</td>
<td>0.92</td>
</tr>
<tr>
<td>Range, °C</td>
<td>2.38</td>
<td>2.48</td>
<td>0.12</td>
<td>0.52</td>
</tr>
<tr>
<td>Hair coat score</td>
<td>2.81</td>
<td>2.44</td>
<td>0.33</td>
<td>0.44</td>
</tr>
</tbody>
</table>

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</tr>
</thead>
<tbody>
<tr>
<td>Hair coat score</td>
<td>3.17</td>
<td>2.08</td>
<td>0.34</td>
<td>0.02</td>
</tr>
</tbody>
</table>
Initial Research - Bulls

Overview (5 years later)

In 2011 we noticed that many of the Kansas-sourced cows were already culled from the herd or placed into groups designated for culling. Most of the Florida-sourced cows remained in the herd. **WHY?**

Study Design

- Study was conducted over three consecutive years using cow/calf pairs.
  - Local Source; Florida Adapted Herd
  - Outside Source; Modern Seedstock Herd (Kansas)

- Calves were fall-borne over a 90-d period.

- Evaluations were conducted in March, April, May, and June of each year.

Study Design

- **Dependent variables included;**
  - Cow and calf BW
  - Cow BCS
  - Cow hair coat score
  - Cow milk production (WSW; March only)

- Data analyzed using the MIXED procedure of SAS with “source” in the model and animal(source x year) as random variable. Individual animal was the experimental unit.

Study Design

- Cow hair coat score based on scoring criteria established by Dr. Joe Cassady, North Carolina State University, as follows;

<table>
<thead>
<tr>
<th>Hair Shedding Score</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Full winter coat</td>
</tr>
<tr>
<td>4</td>
<td>Coat exhibits initial shedding</td>
</tr>
<tr>
<td>3</td>
<td>Coat is halfway shed</td>
</tr>
<tr>
<td>2</td>
<td>Coat is mostly shed</td>
</tr>
<tr>
<td>1</td>
<td>Slick, short summer coat</td>
</tr>
</tbody>
</table>

Cow BW and BCS

<table>
<thead>
<tr>
<th>Item</th>
<th>Florida</th>
<th>Kansas</th>
<th>SEM</th>
<th><em>P</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>n =</td>
<td>16</td>
<td>10</td>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td>BW (lb, March)</td>
<td>904</td>
<td>915</td>
<td>16.8</td>
<td>0.64</td>
</tr>
<tr>
<td>BW (lb, June)</td>
<td>975</td>
<td>1,003</td>
<td>17.6</td>
<td>0.18</td>
</tr>
<tr>
<td>BCS (March)</td>
<td>4.3</td>
<td>3.3</td>
<td>0.16</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>BCS (June)</td>
<td>4.9</td>
<td>4.1</td>
<td>0.19</td>
<td>0.001</td>
</tr>
</tbody>
</table>

1BCS; 1 to 9 scale
### Calf BW, lb

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<th>Kansas</th>
<th>SEM</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calf (March) ¹</td>
<td>205</td>
<td>232</td>
<td>7.1</td>
<td>0.002</td>
</tr>
<tr>
<td>Calf (June) ¹</td>
<td>366</td>
<td>414</td>
<td>5.3</td>
<td>0.001</td>
</tr>
<tr>
<td>ADG ¹</td>
<td>1.70</td>
<td>1.90</td>
<td>0.059</td>
<td>0.005</td>
</tr>
</tbody>
</table>

⁰Adjusted for calf sex

### Hair Coat Shedding

- **Hair coat score (1 to 5 scale)**
  - March: Florida 4.0, Kansas 3.8 (P = 0.008)
  - April: Florida 4.2, Kansas 4.0 (P = 0.04)
  - May: Florida 3.8, Kansas 3.6
  - June: Florida 3.5, Kansas 3.3

### 24-h Adjusted WSW Milk Production Estimates

- **Milk production, lb/d**
  - Florida: 7.5 (75% Greater (P < 0.001) milk production)
  - Kansas: 7.0

### Summary

- Calves from non-adapted, outside source Angus dams had greater pre-weaning BW gain.
- Compared to local source, adapted Angus dams, outside source Angus dams;
  - Less BCS
  - Slower spring hair coat shedding
  - Greater milk production

### Ona White Angus
Ona White Angus – Where did they come from?

- The Ona White Angus is a distinct breed developed at the UF/IFAS Range Cattle Research and Education Center.
- A coloration anomaly that is not fully understood.
- Originally derived from a long-term cattle breeding project lead by Professor F.M. Peacock (Ona) involving the crossbreeding of Brahman, black Angus, and Charolais.

Ona White Angus – Where did they come from?

- In the early 1990’s this cowherd was bred to Simbrah bulls.
- In 1999, we began to breed to black Angus and Brangus.
- In 2002, we began to notice a small number of these cows giving birth to white haired calves with dark skin.
- Since this time, we have focused on increasing the numbers.

Ona White Angus – Where did they come from?

- Originally, we focused on producing White Angus calves that were genetically 7/8 black Angus. This has not worked!
- To date, only one cow has produced a 7/8 black Angus calf. She has 3 daughters in the herd.
- Today, we are focusing on breeding white cows to white bulls – each are ¾ black Angus.

Ona White Angus – What are the advantages?

- In collaboration with researchers from Cornell University we determined that the Ona White Angus have > 80% sweating rates when compared to black Angus cattle reared in the same environment (ASABE. 2008. 51(6):2167).
- This adaptive response results in cooler body temperatures during periods of high heat load.
- Collectively, the Ona White Angus cattle spend less time seeking shade and more time grazing than black Angus cattle.
**Ona White Angus**

*Forage Intake and Grazing Characteristics*

<table>
<thead>
<tr>
<th>Item</th>
<th>White</th>
<th>Black</th>
<th>SEM</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forage DMI, % BW¹</td>
<td>1.27</td>
<td>1.49</td>
<td>0.115</td>
<td>0.15</td>
</tr>
<tr>
<td>Time spent in shade²</td>
<td>45.2</td>
<td>52.6</td>
<td>1.65</td>
<td>&lt;0.01</td>
</tr>
</tbody>
</table>

¹Voluntary intake of ground grass hay in a fully shaded individual feeding facility.
²Percent of time spent in shaded area over a 12 h summer day (07:00 to 19:00)

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**Ona White Angus**

*Forage Intake and Grazing Characteristics*

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**Ona White Angus**

*Why are we selling the herd?*

- The genetic diversity of the Ona White Angus is limited.
- This can be enhanced/improved by an aggressive embryo transfer program focused at mating our Foundation cows (50% black Angus) with multiple black Angus sires.
- But, this is expensive . . .
- In addition, it is a natural expectation for the University to develop technologies and transfer them to the private sector for commercialization.
- As a breed, the Ona White Angus has the potential to provide significant value to the beef cattle production systems in warm climates.

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**Ona White Angus**

*Foundation Cow with Ona White Angus Calf*

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**Ona White Angus**

*Foundation Heifer*

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**Ona White Angus**

*Ona White Angus Heifer (2 years of age)*
Ona White Angus

Ona White Angus Heifer (7/8 black Angus)

Ona White Angus Bull (3/4 black Angus)

Ona White Angus Bull (returning from test)

Ona White Angus Heifers (weaned yearlings)

Ona White Angus Bulls (Yearlings)

Ona White Angus Heifer (2-year old)
Ona White Angus

Ona White Angus Heifer (unweaned; 6 mo)

Ona White Angus Sale

• Sale Date: January 21, 2016 at 10 AM EST
• Cattle will be sold as a single group. No cattle, embryos or semen will be retained. Minimum reserve; $700,000.
• Auction will be available on site or via internet. Buyers must be registered with Producers Cattle Auction before the sale:
  • www. Producerscattleauctions.com
  • 251-633-9306
  • Contact: Todd Clemons, Okeechobee Livestock Mkt.

Ona White Angus Sale

• At buyers discretion, the cattle can remain at the UF/IFAS Range Cattle Research and Education Center through a negotiated management/research contract.
• Prior to the sale, the cattle may be viewed on:
  • October 22
  • November 20
  • December 8
• Information updates are provided as they become available at http://rcrec-ona.ifas.ufl.edu/

Ona White Angus Sale

Audy Spell
Advanced Reproductive Associates

AND

Todd Clemons
Okeechobee Livestock Mkt.

Thank you for your attention

John Arthington
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Range Cattle Research and Education Center, Ona