What’s Wrong With This Picture?
or is it really true?

Dr. Matt Hersom and Dr. Todd Thrift
Extension Beef Cattle Specialist
Sometimes I feel like my role is similar to the police.....
The Beef Belt???

What's Wrong With This Picture?

Source: Colorado State University
Regional Beef Cow Numbers as a Percent of U.S. Total
January 1, 2007

U.S. Total 32,894
Source: USDA (000 head)
45.8% of beef cows can be found in the 13 state SERO and SWRO regions
USDA 2009
The SE is largely ignored in the popular press as a contributor to beef production in the United States.

In fact, we are often accused of producing MOST of the problem cattle.
Can producers improve the value of their calves in a single generation by upgrading their bull selection? An ongoing study at Gardiner Angus Ranch, Ashland, Kan., suggests that in some cases, yes they can.

The Southern Carcass Improvement Project is a collaboration between Gardiner Angus Ranch, Kansas State University and Virginia Tech to determine how much carcass improvement can be made in one generation, using high-carcass-value Angus AI bulls on typical Southern-origin beef cows, representing typical Bos indicus-influenced genetics most often found in Southern states.

Southern calves typically sell at significant discounts to those in Northern markets. Not all those calves deserve their reputation, but the trend is clear. For the week ending Oct. 15, 2011, for example, 500- to 550-pound calves in Texas sales averaged $141.22 per hundredweight, while calves in the same weight class in Nebraska averaged $156.02 — a difference of more than $15 per hundredweight or $78 per head.

Transportation costs can account for some of the Southern discount, but the main factor is buyer perception that the calves, typically mixed-breed, multi-colored types with significant Bos indicus influence, will underperform at the feedyard and packing plant. With that in mind, the researchers designed the study to measure how an infusion of top Angus genetics could affect calf value in a single generation.

Mark Gardiner, of Gardiner Angus Ranch, says bull customers often ask just how much change they could expect in one generation if they used high-quality Angus AI bulls. "We're very data-driven," he says, explaining that he wanted real-world evidence before answering the question.

Gardiner acknowledges that many Southern producers value some level of Bos indicus genetics in their cow herds for heat tolerance. Depending on their priorities, some might use Angus bulls in a terminal-cross system, raising replacement heifers from a different pool of cows. But he says many of his customers in the South raise crossbred Angus-sired replacement heifers. Many, he says, use crossbreeding programs targeting one-quarter Bos indicus, and some have shifted their cow herds to almost 100 percent English genetics.

**DIRECT COMPARISONS**

The Gardiners initiated the SCIP project in 2008, planning a study design utilizing embryo transfer and artificial insemination that would allow direct comparisons of multiple calves from Southern-bred dams, sired by different bulls.

The group purchased 22 typical Southern cow-calf pairs from Georgia, Mississippi and Texas to serve as donors, and flushed the first set of embryos in July 2008. For the control group, the researchers used semen from nine representative Southern AI bulls, all from Bos indicus-influenced breeds. For the treatment group, they selected three proven AI bulls, all from Bos indicus-influenced breeds. For the treatment group, they selected three proven

**BOOSTING Carcass Quality**

The Southern Carcass Improvement Project puts Angus genetics in the Southern herd and money in producers' pockets.

BY TERRI QUECK-MATZIE

From the dry plains of the Southwest to the steamy Gulf Coast, raising cattle in the southern U.S. presents a challenge - the heat is hard on animals.

Producers in those areas have found a heavy influence of Bos indicus is the answer. Loose skin and floppy ears provide greater surface for heat expulsion, and sweat glands in the skin offer additional relief. Plus, they thrive on limited forage and have a high resistance to insects. But Bos indicus cattle aren’t traditionally known for superior carcass traits. Thus, they don’t generally perform well on a value-based marketing grid, which limits profit potential for Southern producers. Only around 20-30% of cattle with significant Bos indicus influence grade USDA Choice and Prime.

That’s where the Southern Carcass Improvement Project (SCIP) comes in. Launched in spring 2009, the study set out to determine how much progress could be made - and how much value gained - in one generation by introducing quality Angus genetics into the typical Southern herd.

“Adaptability in that geography is a big deal,” says Mark Gardiner of Gardiner Angus Ranch, Ashland, KS, and host of the project. “No one is saying there’s no need for Bos indicus cattle in the South. They’re needed for heat tolerance and disease resistance.”

But we sell enough bulls into the Southeast to know there are sometimes problems with the end results. If you can’t make money on the product, it doesn’t do you much good.”

Gardiner stresses: “We’re not trying to change Southern cows. We’re trying to change Southern carcasses.”

So Gardiner selected three proven Angus bulls and set out to breed them to “typical Southern cows.” What makes SCIP unique is its scientific approach to quantifying the
The Southern Carcass Improvement Project

Goal: to measure the impact that a single generation of high quality Angus genetics can have on feedlot and carcass performance when mated to Brahman-cross cattle commonly found in the Southern US.

In ONE generation!
Different Interpretation?

Is the Glass Half Full?... Or Half Empty?
"We aren’t trying to change southern cows....just southern carcasses."

Mark Gardiner - Gardiner Angus Ranch KS
“They end up in America's feedlots in droves....”
Tom Brink Five Rivers Feeding
“...with almost no marbling genetics in their makeup.”

Tom Brink Five Rivers Feeding
The Southern Carcass Improvement Project

“This is a major problem (no marbling), yet there is no broad scale effort to improve quality grades in Southern-origin cattle”

Tom Brink Five Rivers Cattle Feeding
“Choice is always worth more than select”
Tom Brink - Five Rivers Feeders
“Millions of the cattle are fed each year, mostly in KS-OK-TX feedlots, and the carcass results are typically disappointing.”
Tom Brink Five Rivers Feeding
“We aren’t trying to change southern cows….just southern carcasses.”

Mark Gardiner - Gardiner Angus Ranch KS

OK, but...............The reason we use *Bos indicus* influenced bulls is to make good southern cows
Typical “Southern” Cow
Typical “Southern” Cow
The Southern Carcass Improvement Project

• 22 representative cows selected from GA MS and TX and moved to Gardiner Ranch in KS
  – Sale Barn procured
• 12 produced calves from mating to either sires from:
  – 9 Bos indicus influenced breeds OR
  – 3 Angus bulls
• 56 Angus sired or “southern” sired calves in study raised in KANSAS
“Typical southern cow is mated to a typical southern bull”
The Southern Carcass Improvement Project

- *Bos indicus* ("southern") bulls (semen) included (24 hd of calves)
  - Brahman (3 hd)
  - Red Brangus (8 hd)
  - Braford (3 hd)
  - Santa Gertrudis (1 hd)
  - Senepol (2 hd)
  - Simbrah (7 hd)
  - Beefmaster (no calves)
  - Charbray (no calves)
  - Brangus

1 bull of each of these breeds was chosen “at random”
My opinion is that the typical “southern cow” is mated to:

Angus
Charolais
Brangus
“Are these typical Angus bulls?”
The Southern Carcass Improvement Project

- 3 “proven” Angus Bulls included (35 hd of calves)
  - GAR Predistined
  - GAR New Design 5050
  - B/R Ambush 28
    - Top 1% of Angus Breed for Marbling
    - Top 10% of Angus Breed for REA
    - Top 20% of Angus Breed for Yearling Weight
    - Top 1% of Angus Breed for $Beef index
So What Did They Find Out?

• Angus sired calves documented
  – 8.5 fewer gestation days
  – 8 lbs lighter birth weight
  – The same weaning weight
  – 52 lbs heavier at yearling
  – 103 pt marbling advantage
  – .12 inches more backfat
  – +.96 sq in of ribeye
  – 61 lbs increase in carcass weight
  – $134 carcass advantage
  – $42 more feed consumed (5 lbs/d more)
  – $92 net economic advantage
## SCIP Quality Grade Results 56 hd

<table>
<thead>
<tr>
<th>Quality Grade</th>
<th>Angus Sired</th>
<th>Southern Sired</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard</td>
<td>0%</td>
<td>5%</td>
</tr>
<tr>
<td>Low Select</td>
<td>3%</td>
<td>59%</td>
</tr>
<tr>
<td>High Select</td>
<td>29%</td>
<td>36%</td>
</tr>
<tr>
<td>Low Choice</td>
<td>51%</td>
<td>0%</td>
</tr>
<tr>
<td>Mid Choice (CAB)</td>
<td>17%</td>
<td>0%</td>
</tr>
<tr>
<td>Total Choice</td>
<td>69%</td>
<td>0%</td>
</tr>
</tbody>
</table>
Is this Apples to Apples?

“Bred Not So Right”

Sire: Bos indicus (Brahman)
Carcass wt: 857 lbs.
Mid Select YG1
REA 16.0 sq. inches
REA/cwt = 1.9
Carcass Price $1.72/lb
Total Value $1,473

“Bred Right”

Sire: Angus (Predestined)
Carcass wt: 966 lbs.
Mid Choice YG3
REA 15.2 sq. inches
REA/cwt = 1.6
Carcass Price $1.80/lb
Total Value $1,737

“Same age, Same dam, Same opportunity to create value….
$264 per head difference!”
Why did they make so much more ($264) money on the “Bred right steer”?

$264 more carcass value
$187.48 due to carcass weight (71%)
$53.13 due to grading Choice (20%)
$23.96 due to qualifying for CAB (9%)

Cattle sold on a grid that rewarded for Quality Grade and not Yield Grade.
“Another Bred Not So Right”

Slight 30 marbling score
Low select

“Low Value!”
Market Value Survey by 95 Cattle Feeders, Stocker Operators and Auction Barn Owners

Market Price Comparison (700 lb steers)

Angus x Southern $128.09/cwt
Southern x Southern $118.86/cwt
Angus Price Advantage $9.23/cwt (P<.01)
Difference in value $64.62/hd
MY Economic Evaluation SCIP

Angus vs Southern Carcass Value Adv $134.04/hd

Angus vs Southern Feedlot Costs $-41.31/hd

Net Economic Advantage $92.72/hd

Cost of “Southern Feeders” $-64.62/hd

REAL Net Economic Advantage $28.10/hd
Results subject to interpretation?

Really .........that is all....

$28.10/hd

When you compare three of the best Angus Bulls in the breed to a mix of “southern bulls” with unknown genetics

Very little data was reported
Real Data Total Animal Value, $ (1367 hd)
The Southern Carcass Improvement Project

SUMMARY (not my summary)

• “Low grading, low value carcasses can be readily produced via generic mixing traditional southern breeds”

• “SCIP provides a roadmap to southern producers for increasing revenue and profitability of their cattle operations”
The Southern Carcass Improvement Project
SUMMARY by Dr. C. Lex Genes

“Please look forward to upcoming northern/national publications where the editors will enlist northern experts to tell:

– Crackers how to best prepare swamp cabbage
– Cajuns how to best make crawfish etouffee
– Texans how to smoke brisket”
Crossbreeding: Considerations and Alternatives in an Evolving Market?

Nevil Speer
White Paper written for Certified Angus Beef
“Straightbreeding is the Commercial Trend”

Wes Ishmeal - Beef Magazine
Mongrelized Mess?
Do we need to Crossbreed?
“Say ... what’s a mountain goat doing way up here in a cloud bank?”

Should we be asking this question?
Crossbreeding: Considerations and Alternatives in an Evolving Market (Speer 2011)

• Hybrid Vigor of crossbreds improves weaning weight 10-20%

• “Weaning Weight also represents the trait in which the greatest benefit of crossbreeding can be realized”

• NOT Exactly……..
Hybrid vigor

- Is highest in factors affecting efficiency of cows
  - Fertility
  - Calf survival
  - Longevity

- Is intermediate in growth traits
  - Milk Production
  - Weight gain

- Is low in carcass traits
  - Fat thickness
  - REA
Hybrid vigor for most traits seems to be greatest in sub-optimal environments
Weaning Weight of Angus and Brangus under commercial conditions in North Florida (Yelich 2012)
Performance of the Brahman cross female (F1 Brahman x British)

As compared to straightbreds

- Calving rate +10%
- Calf survival +5%
- Weaning rate +12.5%
- Calf weight at weaning +70 lbs

Louisiana - Franke, 1980
Crossbreeding: Considerations and Alternatives in an Evolving Market (Speer 2011)

• “The Angus breed now accounts for approximately 70% or more of the genetics in the nation's commercial cow herd”

• We have bred for the market
Industry Trends—Predominant Hide Color

- Black: 56%
- Red: 19%
- Holstein: 8%
- Gray: 6%
- Yellow: 5%
- Brown: 3%
- White: 2%
- Brindle: 1%
Is color a good indicator of uniformity?
Turning cattle all one color does not make them more uniform in any traits....... except color!
Using one breed (straightbreeding) regardless of color does not reduce variation!
Crossbreeding: Considerations and Alternatives in an Evolving Market (Speer 2011)

- Performance differences have narrowed over time and Angus cattle now grow like Simmental cattle so there is basically no need to crossbred for increased growth.

- Well sort of ........
  - Growth is the same (yearling weight)
  - Which means cow size is the same (1400 lbs)
  - Milk is also similar (to Simmental)
But a Simmental x Angus cow will still:

Reproduce at a higher rate
Live longer
Wean more calves

Due to heterosis!
“The marginal benefit of heterosis isn’t sufficient if it’s associated with the added marginal cost of purchasing genetics that might represent the risk of requiring more time and labor.”
So...Crossbreeding and Heterosis leads to a decline in functional traits like:

Calving ease

Really??????
Birth Weight of Angus and Brangus under commercial conditions in North Florida (Yelich 2012)
Influence of *Bos indicus* breeding on Calving Ease

<table>
<thead>
<tr>
<th></th>
<th>Brahman Cow</th>
<th>Charolais Cow</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Brahman fetus</td>
<td>Charolais fetus</td>
<td>Brahman fetus</td>
</tr>
<tr>
<td>Uterine blood flow</td>
<td>5.01&lt;sup&gt;a&lt;/sup&gt;</td>
<td>4.66&lt;sup&gt;a&lt;/sup&gt;</td>
<td>7.18&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>Fetal wt d 271, lbs</td>
<td>56</td>
<td>75</td>
<td>67</td>
</tr>
</tbody>
</table>

<sup>a,b,c</sup> P<.05

(Adapted from Ferrell, 1991)

This relationship has been shown to exist in ½ blood cows as well!
What about the other functional traits like:

- Environmental adaptability
- Horn fly resistance
- Pink eye susceptabilty
- Disposition
- Longevity
- Freedom from teat and udder abnormalities
- Feet and leg soundness
Parasite Resistance

• Horn Flies
  – Reduce milk production
  – Reduce weaning wt
    • For every 100 flies, calf weight declines 18 lbs

  – The horn fly reduction from Brahman breeding was equal to or greater than that realized from continuous spraying of organophosphate insecticides

Arkansas - Steelman et al., 1991, 1994
Parasite Resistance

<table>
<thead>
<tr>
<th>Heifer breed</th>
<th>horn fly count</th>
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<tbody>
<tr>
<td>Angus</td>
<td>281</td>
</tr>
<tr>
<td>Angus x Brahman</td>
<td>153</td>
</tr>
<tr>
<td>Brahman x Angus</td>
<td>157</td>
</tr>
<tr>
<td>Brahman</td>
<td>63</td>
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Arkansas - Brown et al., 1993a
## Teeth deterioration

<table>
<thead>
<tr>
<th>Breed</th>
<th>smooth mouth*</th>
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</thead>
<tbody>
<tr>
<td>Angus x Hereford</td>
<td>.65</td>
</tr>
<tr>
<td>Grey Brahman x Hereford</td>
<td>.99</td>
</tr>
<tr>
<td>Red Brahman x Hereford</td>
<td>.99</td>
</tr>
</tbody>
</table>

*0=smooth and 1= broken or solid mouth @ 14yrs of age

Texas - Riley et al., 2001b
# Cow Longevity

<table>
<thead>
<tr>
<th>Breed</th>
<th>Age</th>
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</thead>
<tbody>
<tr>
<td>Brahman x Hereford</td>
<td>10.9</td>
</tr>
<tr>
<td>Hereford</td>
<td>7.9</td>
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</table>

Texas - Cartwright et al., 1964
## Cow Longevity

<table>
<thead>
<tr>
<th>Breed</th>
<th>% in herd @ start of the 8\textsuperscript{th} breeding season</th>
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</thead>
<tbody>
<tr>
<td>Brahman x Hereford</td>
<td>90%</td>
</tr>
<tr>
<td>Hereford</td>
<td>48.5%</td>
</tr>
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</table>

Nevada - Bailey, 1991
# Cow Longevity

<table>
<thead>
<tr>
<th>Breed</th>
<th>Age</th>
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</thead>
<tbody>
<tr>
<td>Angus</td>
<td>10.3</td>
</tr>
<tr>
<td>Hereford</td>
<td>9.8</td>
</tr>
<tr>
<td>Brahman</td>
<td>9.7</td>
</tr>
<tr>
<td><strong>Angus x Hereford</strong></td>
<td>11.7</td>
</tr>
<tr>
<td><strong>Brahman x Angus</strong></td>
<td>14.7</td>
</tr>
<tr>
<td><strong>Brahman x Hereford</strong></td>
<td>13.2</td>
</tr>
</tbody>
</table>

Texas - Rohrer et al., 1988a
Cow Longevity-Failure to Reproduce

<table>
<thead>
<tr>
<th>Breed</th>
<th>% of cows culled for repro failure*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angus x Hereford</td>
<td>53</td>
</tr>
<tr>
<td>Grey Brahman x Hereford</td>
<td>27</td>
</tr>
<tr>
<td>Red Brahman x Hereford</td>
<td>29</td>
</tr>
</tbody>
</table>

*repro failure=failed to calve or wean a calf

Texas - Riley et al., 2001b
Cow Longevity- Are they really productive to an OLD AGE?

Brahman x Hereford Cows Mated to Simmental Bulls

<table>
<thead>
<tr>
<th>Age</th>
<th>Weaning Wt</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-12 years</td>
<td>565</td>
</tr>
<tr>
<td>12-17 years</td>
<td>569</td>
</tr>
</tbody>
</table>

Texas - Gaertner et al., 1992
Straightbreeding

2 + 2 = 4

Crossbreeding

2 + 2 = 5

Crossbreeding with the Brahman cross female

2 + 2 = 6
Lbs of calf weaned per cow exposed can be increased 25-35% or more due to the cumulative effects of hybrid vigor!

More than half of this advantage is dependant on the use of a crossbred cow!
There is a reason we use them in the south!
Did the poultry industry obtain their current position by Straightbreeding?
What about the Swine industry? Do they use straightbreeding?
Results are always subject to different interpretation
Angus Are Not the Holstein of the Beef Industry?

They do have:

- the best genetic evaluation (EPDs)
- many have great growth traits
- super carcass traits
- great maternal traits (in a temperate climate)
- great marketing (CAB)
- and are great in crossbreeding systems
Be Cautious of Exaggerated Claims?

Wanted - Recycling Specialist. Must be an outgoing individual with a love of all things outdoor and earthy. Sense of smell not critical. Ability to lift heavy loads is a must. Good hand eye coordination helpful.
Questions