

Hair Coat Shedding in Angus Dams

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Heat Stress

- Reduced
 - Conception Rates
 - Milk Production
 - Feed Intake
 - Weight Gains
- Death

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Cows Susceptible to Heat Stress

- Past Health Problems
 - Respiratory disease
- Cattle in Confinement
 - Less air movement
 - More radiant heat due to concrete or compact dirt
 - Less Shade
- Heavy Cattle (> 1000 lb)
- Dark Hided cattle

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Common Signs of Heat Stress

- Slobbering
- High respiratory rate (panting)
- Decreased mobility
- Decreased appetite
- Poorer general health

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Evaporative Cooling (How a Cow cool's off)



- Factor's that decrease ability for cow to cool off
 - humidity
 - wind speed
 - respiration rate
 - sweat gland activity

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Evaporative Cooling

- Humidity ↑
 - water from sweat or even sweat vapor gets trapped between hair follicles
 - energy in thermoregulation
 - respiration rate
 - Sweat
- Results in Heat Stress

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Hair Coat Type and Hair Coat Shedding

- ❑ Hair Coat type

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Hair Coat Type and Hair Coat Shedding



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Hair Coat and Hair Coat Shedding

- ❑ Hair Coat type
- ❑ Hair Coat Shedding

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Hair Coat Type and Hair Coat Shedding



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Hair Coat and Hair Coat Shedding

- ❑ Hair Coat type
- ❑ Hair Coat Shedding
- ❑ Forage type

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Hair Coat and Hair Coat Shedding



Kentucky Fescue 31 White Clover Coastal Bermuda
 Red Clover Big Bluestem

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Hair Coat Shedding in the Past

- 1960 – First Hair Coat shedding study published
 - Australia
 - Hereford, Shorthorn, Zebu, British/Zebu Cross
 - 7 point scoring system
 - Heritability - 0.63
 - Half-sib model
 - Repeatability – 0.6
 - Genetic Correlation with calf growth (- 0.577)

(Turner and Schleger, 1960)

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Hair Coat Shedding in the Present

- 2006 – Colorado State University - (Williams et al., 2006)
 - Replacement Limousin Sires for Brazilian Herds
 - 5 point scoring system
 - Heritability - 0.33
- Concluded that Selection for Hair coat shedding in US would increase growth in Brazil
- $h^2 = 0.38$ (Jenkinson et al., 1975)

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Calf Coat Shedding

- Slick calves vs. Full coat calves
 - No difference in weaning weight
 - Faster post-weaning growth

(Olsen et al., 2003)

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Objective

- Assess the amount of variation in coat shedding of Angus cows
- Determine coat shedding relationship with pounds of calf weaned and BCS.

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Materials and Methods

Description of Data

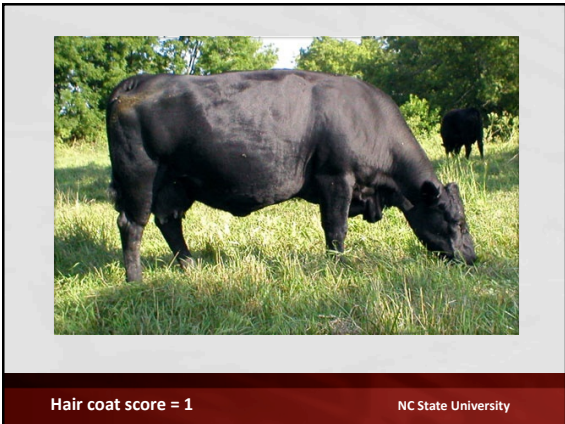
Registered Angus Cows	n = 532 (904 obs)
Age of Cows	3 - 13 yrs
Diet	NCSU - Endophyte infected fescue pasture MSU - Mixed warm-season grasses, annual ryegrass, and non-toxic endophyte-infected tall fescue at
Location	UPRS, MSU (3 locations)
Collection of Data	once per month over 2 years
Scores	1 (slick) - 5 (full winter coat) Scale

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Hair coat score = 5

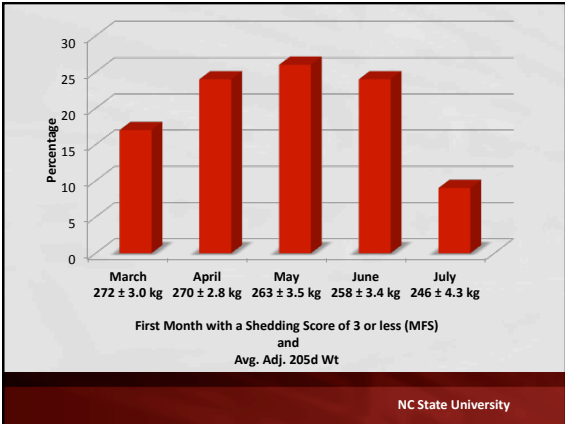
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Materials and Methods

- Procedure
 - First month with a score of 3 or less was recorded.
- Model (Adj. 205 d wt)
 - Fixed
 - Month Shed (March – July)
 - Year (2007 – 2009)
 - Location (4 levels)
 - Sex of Calf (Bull or Heifer)
 - Random
 - Sire of Calf

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LS Means (MFS)

Contrast	Difference	Standard Error	P-value
March – April	1.9	3.06	0.54
March – May	8.5	4.14	0.04
March – June	13.7	4.28	0.01
March – July	25.7	5.1	0.01
April – May	6.6	3.51	0.06
April – June	11.8	3.68	0.01
April – July	23.9	4.63	0.01
May – June	5.2	3.21	0.10
May – July	17.3	4.25	0.01
June – July	12.1	3.99	0.01

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Materials and Methods

☐ Cows seperated into two groups

- MFS = March, April, or May
- MFS = June and July

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LS Means (Combined Months)

n=373	n=334	Estimate	SE	P value
March -May	June - July	24.4 lbs	2.8	<.0001

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Genetic Relationships

	205 d wt	Shed
205 d wt	0.27	
Shed	- 0.58	0.35

Heritability on diagonal
Genetic Correlation below diagonal

Repeatability 0.65

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Conclusion

☐ Shedding Scores

- Score in May (in Southeast)
- Selecting for shedding in Southeast could increase calf weight

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Conclusion

☐ Possible Explanations

- Prolactin concentrations
 - Mammary development
 - Hair regression
- Diet
 - Endophyte Infected Tall Fescue
- Ambient Temperature

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Conclusion

☐ Genotype x Environment?

- Need to test in non-fescue
- Need to test in different weather
 - MT, ND, AZ and Midwest states

☐ Other Productive traits of interest

- Longevity
- Gestation Length
- Puberty

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Conclusion

- ❑ **Genotype x Environment?**
 - Need to test in non-fescue
 - Need to test in different weather
 - MT, ND, AZ and Midwest states
- ❑ **Other Productive traits of interest**
 - Longevity
 - Gestation Length
 - Puberty

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Current Project

- ❑ **A project is currently underway to collect data on > 5000 Angus cows.**
- ❑ **Data collected over the last two weeks**

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Current Project

State	Number of Cows	State	Number of Cows
Missouri	1600	Iowa	200
Texas	2200	Tennessee	330
Virginia	900	Alabama	125
North Carolina	300	Kentucky	125
South Carolina	400	Total	6420
Mississippi	240		

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Questions?



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