Comparison of Texas Rambouillet sheep with Australian Merino F1 Crosses

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Comparison of Texas Rambouillet sheep with Australian Merino F1 Crosses

Collaborators:

- **Shawn Ramsey, TAMU, College Station.**

- **Mike Salisbury, Angelo State University.**

- **Faron Pfeiffer, Dan Waldron, John Walker, and Tim Willingham, Texas AgriLife Research, San Angelo.**

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Background and Objectives

U.S. research to increase profitability of sheep production:

- Increase lamb production; usually requires increased inputs….nutrition, labor, etc.

- Decrease production costs…..popular hair sheep.

✓ **Increase wool production and value.**

- Snowder et al. 1990's. 4-state evaluation of two Merino types.
- Glimp, Univ. Nevada
- Private breeders

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Approach

- **Identify Merino rams capable of producing more and finer (more valuable) wool than Rambouillets (the easy part; but in addition).**

- **Must be comparable in size and reproduction potential to Rambouillets because lamb production cannot be compromised.**

- **Must be smooth bodied.**

Approach

- **Australian sheep genetic databases on line.**
- **Merino Superior Sires**
- **http://merinosuperiorsires.com.au**
  Measures performance of ram progeny (at 10 different geographic locations); uses link sires.
- **Sheep Genetics Merino Select**
- **http://www.sheepgenetics.org.au/merinoselect**

- **Dr. Jim Watts, SRS Co., Australia**

- **Drs. Hudson Glimp and Tumen Wuliji**

Ram selection criteria

Trait	Merino	Rambouillet
Clean wool, kg	10	6
AFD, µm	< 19	21.0-22.5
Mature BW, kg	115	115
Smooth bodied		
Comparable reproduction potential		

Approach

Keri Keri 2445

TRSG ram

Australian Merino Studs

- **Hyfield, WA (via Martin Dally)**
- **Keri-Keri, NSW**
- **Leahcim, SA**
- **Wallaloo Park, VIC (John Carter)**

U.S. Merino Sires (Year 3 only)

- **Rafter 7 Ranch, University of Nevada-Reno**

U.S. Rambouillet Sires

- **Texas Rambouillet Superior Genetics, Mertzon, TX (10 collaborating breeders).**
- **Landers Rambouillets, Menard, TX**
- **Angelo State University, San Angelo, TX**

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Approach

- Purchase, import, and store semen (expensive proposition).
- Impregnate ewes using laparoscopic artificial insemination.
- Naturally breed control ewes to high performing Rambouillet sires (exposed 3 weeks before and after LAI day).
- Evaluate BW, wool production and quality on yearlings, 2-, and 3-year-old sheep.
- Evaluate lamb production on ewes bred as 1-, 2-, and 3-yr olds.

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Synchronization of ewes

- **Day 0, insert CIDRS.**

- **Day 14, 500 IU PMSG/ewe.**

- **Introduce teaser rams fitted with marking harnesses.**

- **Day 16, LAI marked ewes.**

Results

YEAR 1

- 187 ewes bred using LAI to 5 Australian Merino sires.
- 115 ewes bred naturally to 4 Rambouillet sires.
- Ewes bred in June to lamb in November, 2007.

YEAR 2

- 219 ewes bred using LAI to 3 Australian Merino sires.
- 129 ewes bred naturally to 4 Rambouillet sires.
- Ewes bred in October 2008 to lamb in March 2009.

YEAR 3

- 69 ewes bred using LAI to 5 Australian Merino sires.
- 114 ewes bred naturally to 4 U.S. Merino sires.
- 161 ewes bred naturally to 4 Rambouillet sires.
- Ewes bred in October 2009 to lamb in March 2010.

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Results

- YEAR 1
- Ewes were pregnancy tested 45 days after LAI.
- Natural breeding, 84% pregnant.
- LAI, 75% pregnant.
- Because insemination/natural breeding occurred during hot summer, these results were very encouraging.

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Results

- **YEAR 2**
- **Ewes were pregnancy tested 45 days after LAI.**
- **Natural breeding, 81% pregnant.**
- **LAI, 52% pregnant.**

Results

- **YEAR 3**
- **Ewes were pregnancy tested 45 days after LAI.**
- **Natural breeding, 92% pregnant.**
- **LAI, 87% pregnant.**

Results (YEAR 1)

- Percentage of pregnant ewes at 45 days was not a good indicator of number of lambs born or weaned.

- Why?

- Many fetuses apparently became unviable and were reabsorbed or expelled (not observed).

- Some new-born lambs may have been lost to predators.

- Some lambs died before weaning.

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Results (Year 1)

- Lambs weaned per sire

Sire	Breed	No. Lambs
TRSG 1377	Rambouillet	21 (30 ewes)
Hyfield 9.92	Merino	13 (37)
Keri Keri 2445	Merino	13 (37)
TRSG 1351	Rambouillet	12 (30)
Leahcim 154	Merino	10 (37)
TRSG 1349	Rambouillet	10 (30)
Leahcim 9	Merino	7 (37)
Wallaloo Park 2	Merino	4 (37)
TRSG 1432	Rambouillet	1 (30)

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Results, 2007 fall lambs

- 91 lambs with known sires (DNA confirmation) have survived.

- These lambs were shorn for the first time in April 2009. The females were bred in October, 2009.

Body weights and fiber characteristics of 2007 fall-born lambs (males and females)

Dependant variable	M X R (n=47)	R (n=44)	*P* value
BW, kg (5 mo)	27.8	29.3	0.357
BW, kg (10 mo)	44.0	48.4	0.049
AFD, μm (7 mo)	18.1	19.5	0.005
ASL, mm	51.6	49.3	0.596
AFC, deg/mm	73.4	80.8	0.042

First fleece and fiber characteristics

Dependant variable	M X R (n=47)	R (n=44)	*P* value
GFW, kg	4.3	4.1	0.543
CWFP, %	60.8	56.3	0.005
CFW, kg	2.6	2.3	0.119
CW/BW, g/kg	58.8	48.0	0.012
AFD, μm	17.8	18.7	0.015
ASL, cm	12.0	11.4	0.429
AFC, deg/mm	87.2	95.5	0.019
CF, %	99.7	99.5	0.010

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Body weights of ram lambs born in Fall 2007

	M X R (n = 20)	R (n = 21)
BW1, 5 mo	30.5	30.7
BW2, 6 mo	33.1	33.8
BW3, 10 mo	49.4	53.7
BW4, 26 mo	71.2	75.8

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Fiber data for ram lambs born in Fall 2007 (20 mo old, 9 mo fleece)

	M X R (n = 20)	R (n = 21)
AFD, microns	19.2	20.1
CV, %	14.1	14.6
SL, mm	70.5[a]	61.3[b]
AFC, deg/mm	79.3[b]	91.0[a]

Income from 2007 fall-born lambs

	M X R	R	Difference
Feeder lambs			
BW-5mo, kg	27.8	29.3	-1.5
Value, $/lamb	67.43	71.06	-3.63
Yearling fleeces			
CFW, kg	2.6	2.3	0.3
AFD, micron	17.8	18.7	-0.9
Loan rate, $/clean kg	11.62 (8.55)	7.45	4.17
Wool income, $/head	30.21 (22.23)	17.13	13.08 (5.10)

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Results (YEAR 2)

- **Number of lambs at 10 weeks of age**

Sire	Breed	No. Lambs
ASU 5674	R	25 (32 ewes)
KK 2445	M	36 (73)
Landers 815	R	29 (32)
LPM 154	M	34 (73)
LPM 9	M	26 (73)
TRSG 881	R	16 (32)
TRSG 902	R	24 (32)

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Body weights of ram lambs born in Spring 2009

	M X R (n = 48)	R (n = 46)
BW1, 2 mo	19.4	19.2
BW2, 5 mo	26.6	24.9
BW3, 6.5 mo	36.6	35.6
BW4, 10 mo	42.9	43.4

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Fiber data for ram lambs born in Spring 2009 (10 months of age)

	M X R (n = 48)	R (n = 46)
AFD, microns	17.8[b]	18.9[a]
CV, %	16.6	16.2
SL, mm	68.1[a]	58.2[b]
AFC, deg/mm	75.0[b]	89.5[a]

Plans

- **Females will be further evaluated for wool and lamb production.**

- **Another lamb crop is being produced (will be born in 2010) using Merino and Rambouillet rams from different sources.**

- **Rams will be evaluated for wool and meat production.**