University of Wyoming (Pilot) Pasture Based Ram Test: Producer Summary

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Purpose: To develop a pasture/range-based ram test protocol that enhances selection for rams adapted to western grazing scenarios, integrating a pasture-based performance period with existing ram test protocols. This initial pilot year was used to test whether consistent intake could be achieved by rams and collect performance data so that the test can be incorporated permanently into the whiteface ram test.

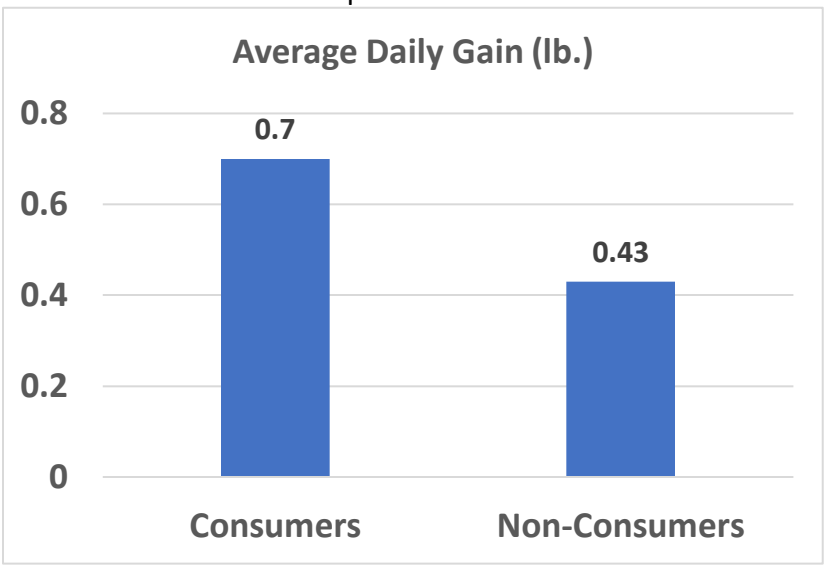
Methods: Rams (n=81) from 13 consigners were delivered and double weighed to generate a starting weight. Rams were then transported to a corral adjacent to irrigated pasture with SmartFeeder trailer (Figure 1) and confined for 4 days to acclimate to feeder. Rams were fed a dry distiller's grain (DDGS) pellet (Table 1) at 0.75% of their initial body weight. Rams were limit fed hay in the evening to incentivize familiarization with the SmartFeeder during the 4 day acclimation period. Approximately 55 to 60% of rams were consuming from the SmartFeeder after 4 days of acclimation. Rams were turned out at 8:00 am and allowed to graze until 7pm at which time they were night penned due to predation concerns. The designated hay pasture for the test was a non-native conglomerate of meadow brome (*Bromus riparius*), timothy (*Phleum pretense*), creeping foxtail (*Alopecurus arundinaceus),* and sedge mixture 19.2 acres in size producing 2,200 tons/acre. The amount of forage consumed by the sheep during the experiment was collected using three transect lines. The total amount of available forage was hand clipped before and after the sheep had finished grazing. A one quarter meter squared hoop was used at three random points along each transect. The total weight for before and after grazing was recorded. The total utilization of available forage for the pasture was determined by dividing the amount of forage after grazing by the amount of forage before grazing. This number, the amount of available forage left, was multiplied by 100 resulting in the total percent of forage left in the pasture and not consumed by the sheep. The total amount of forage not used was then subtracted from 100 to give the percent of forage consumed by the sheep. Utilization of the pasture was 5.0%. See Table 1 for nutritional composition of pasture and DDGS.

Summary: The 2018 pasture-based ram test was conducted September 14 to October 12 for a 28 day performance test period, ideally this would be a minimum of approx. 60 days in the future but delivery logistics and inclement weather might limit these options. Of the 81 total rams on test 46 (57%) of the rams consistently consumed the supplement from the SmartFeeder apparatus. A central premise of central performance tests is to subject rams to equal management conditions which includes the same diet. Consequently, rams that did not consume supplement can't be accurately compared to rams that ate their allotted daily supplement.

Thus, two separate groups of rams resulted from management conditions of the test, 1) those that consumed the supplement "consumers", and 2) those that did not consume the supplement "non-consumers". Rams that consumed supplement gained 0.70 lb. per day, whereas those that did not consume supplement gained 0.43 lb. per day.

Figure 1. Image of Smartfeeder trailer which reads EID tag to administer the pre-programmed amount of supplement. The feed trays sit on load bars so the exact amount of supplement consumed is weighed.

Figure 2. Growth performance of rams consuming a dried distillers grain pellet at 0.75% of their initial body weight with free-choice access to pasture, "Consumers", and those rams that did not consume the pellet with free-choice access to pasture "Non-Consumers".



Additionally, we established a supplement efficiency ratio (28 day total gain lb. ÷ 28 day lb. of supplement intake) for the "consumers" ram group. Theoretically, a ram with a higher supplement efficiency ratio would estimate greater efficiency of gain under study conditions when supplement intake is quantified.

For example, if one ram ate his allotted 0.75% of his body weight during the study for a total of 15 lb. and gained 10 lb. his supplement efficiency ratio = 0.66 (10 lb. of gain ÷ 15 lb. supplement consumed = .66) compared to a ram that gained 16 lb. and consumed 18 lb. of supplement over 28, supplement efficiency ratio = 0.88 (16 lb. of gain ÷ 18 lb. supplement consumed = .66).

We acknowledge that under a pasture-based ram test we can't calculate true feed efficiency since we cannot quantify the amount of pasture consumed, but we are proposing an alternative approach that prioritizes efficiency based on the more expensive feed input ($400/ton DDGS vs. $120/ton pasture). Additional factors such as beginning weight of ram, ram pre-conditioning prior to delivery, and compensatory gain issues limit our ability to attribute performance differences to the ram's genetics. However, higher performing rams under these test conditions help us better simulate the ranch conditions these rams will live in and be expected to perform in. We will continue to refine and improve our methods to calculate grazing efficiency for this pasture-based test moving forward.

Insights and Future Plans for 2019: We are proposing some of the following for next year's pasture-based ram test. These are open for discussion for growers and the ram test committee:

- The pasture-based ram test be incorporated into the overall ram test for the first 56 days of the test.
- **September 1st** start date to provide longer adaptation period (7 to 10 days) to Smart Feeder and ensure grazing is available for 56 days before weather conditions push us into the dry-lot.
- Two Smartfeeder trailers will be utilized to reduce competition and dominant behavior at the feeder.

Table 1. Nutrient composition of dried distillers grain pellets and meadow brome pasture

Item	Pasture	Dried Distillers Grain Pellet
Dry Matter, %	83.9	90.1
Crude Protein, %	6.4	32.5
Acid Detergent Fiber, %	35.5	13.7
Neutral Detergent Fiber, %	55.0	31.8
Total Digestible Nutrients (TDN), %	62.1	79.4
Calcium, %	0.56	0.08
Oil, %	5.1	10.2
Phosphorus, %	0.17	0.98
Potassium, %	1.72	1.27
Magnesium, %	0.25	0.36
Sulfur, %	0.18	0.73
Sodium Chloride, %	1.81	0.32
Copper, ppm	0.4	4.7
Zinc, ppm	13.2	61.2
Iron, ppm	354	138
Molybdenum, ppm	1.69	1.51

Table 2. Summary of 28 day ram performance for rams that consumed their allocated supplement "Consumers".

Consigner	Test No.	Ear Tag No.	BREED	Start Wt	End Wt	Gain	28 d ADG	Supplement Efficiency (lb gained/lb. consumed)
Jullian	22	18-40-1	Rambouillet	158	192	34.0	1.21	1.11
Bell	34	W922	Rambouillet	109.5	141	31.5	1.13	1.40
Peterson	77	4276	Rambouillet	127	158	31.0	1.11	1.20
Peterson	81	4291	Rambouillet	108.5	139	30.5	1.09	1.36
Peterson	68	4274	Rambouillet	106.5	133	26.5	0.95	1.73
Peterson	67	4207	Rambouillet	96.5	123	26.5	0.95	1.27
Jullian	20	18-21-2	Rambouillet	118	144	26.0	0.93	1.09
Peterson	80	4306	Rambouillet	103.5	129	25.5	0.91	1.19
Forbes	55	2778	Rambouillet	90	115	25.0	0.89	1.37
Forbes	56	2781	Rambouillet	110.5	135	24.5	0.88	1.34
Peterson	71	4232	Rambouillet	114	138	24.0	0.86	1.24
LREC	15	8006	Rambouillet	152	176	24.0	0.86	0.83
Bell	29	W896	Rambouillet	111.5	135	23.5	0.84	1.01
LREC	12	8016	Rambouillet	144	167	23.0	0.82	0.84
Jullian	21	18-57-1	Rambouillet	147	170	23.0	0.82	0.82
L. Rabel	65	378	Rambouillet	138.5	161	22.5	0.80	0.86
Peterson	69	4263	Rambouillet	108	130	22.0	0.79	1.37
Bell	26	P934	Targhee	103.5	125	21.5	0.77	1.46
Peterson	66	4223	Rambouillet	120.5	142	21.5	0.77	1.12
LREC	17	8018	Rambouillet	123.5	145	21.5	0.77	0.90
LREC	18	8024	Rambouillet	131	152	21.0	0.75	0.99
Peterson	70	4225	Rambouillet	119	140	21.0	0.75	0.87
Peterson	78	4206	Rambouillet	99.5	120	20.5	0.73	1.06
McGivney	51	190	Rambouillet	97	117	20.0	0.71	1.28
Bell	25	P901	Targhee	102	122	20.0	0.71	1.22
LREC	14	8014	Rambouillet	141	161	20.0	0.71	0.73
McCormick	46	18103	Rambouillet	143	162	19.0	0.68	0.71
Willies	37	1515	Rambouillet	86.5	105	18.5	0.66	1.01
Willies	38	531	Rambouillet	98	116	18.0	0.64	0.96
McCormick	49	18109	Rambouillet	170	188	18.0	0.64	0.56
Bell	23	B897	Columbia	108.5	126	17.5	0.63	0.95
Willies	40	64	Rambouillet	100.5	117	16.5	0.59	0.78
Brad Boner	4	Y823	Targhee	88	104	16.0	0.57	0.87
Ryan Boner	9	R821	Targhee	77.5	93	15.5	0.55	1.19
McCormick	48	18108	Rambouillet	159.5	175	15.5	0.55	0.51
Forbes	53	2780	Rambouillet	75	90	15.0	0.54	0.96
McCormick	45	18002	Rambouillet	138.5	153	14.5	0.52	0.57
Rabel	61	382	Rambouillet	109	123	14.0	0.50	1.01
Rabel	62	389	Rambouillet	62.5	76	13.5	0.48	0.85
LREC	13	8011	Rambouillet	125	138	13.0	0.46	0.52
Rabel	63	385	Rambouillet	73.5	86	12.5	0.45	1.31
Brad Boner	5	Y834	Targhee	82.5	93	10.5	0.38	0.90
McCormick	50	18107	Rambouillet	140.5	151	10.5	0.38	0.37
Brad Boner	1	Y801	Targhee	80.5	90	9.5	0.34	0.58
Brad Boner	3	Y807	Targhee	76.5	83	6.5	0.23	0.64
McCormick	47	18102	Rambouillet	144.5	149	4.5	0.16	0.26
				Average	**113.47**	**133.22**	**19.75**	**0.71**

Table 3. Summary of 28 day ram performance for rams that did not consume their allocated supplement "Non-Consumers".

Consigner	Test No.	Ear Tag No.	BREED	Start Wt	End Wt	Gain	28 d ADG
Peterson	74	4211	Rambouillet	119	143	24.0	0.86
Peterson	75	4244	Rambouillet	130	154	24.0	0.86
Garson	44	1517	Rambouillet	118	137	19.0	0.68
Bell	31	W895	Rambouillet	112.5	130	17.5	0.63
Bell	28	P853	Targhee	95	112	17.0	0.61
Willies	39	1502	Rambouillet	108	125	17.0	0.61
Garson	43	1513	Rambouillet	115.5	132	16.5	0.59
Rabel	60	383	Rambouillet	106	122	16.0	0.57
LREC	16	8020	Rambouillet	161	175	14.0	0.50
Willies	41	66	Rambouillet	128.5	142	13.5	0.48
Bell	30	W872	Rambouillet	103	116	13.0	0.46
McGivney	52	189	Rambouillet	89	101	12.0	0.43
Rabel	58	381	Rambouillet	87	99	12.0	0.43
Rabel	59	384	Rambouillet	79	91	12.0	0.43
Bell	32	W901	Rambouillet	110.5	122	11.5	0.41
Willies	35	1512	Rambouillet	81.5	93	11.5	0.41
Peterson	72	4212	Rambouillet	114.5	126	11.5	0.41
Ryan Boner	7	R804	Targhee	71	82	11.0	0.39
Ryan Boner	10	R830	Targhee	81	92	11.0	0.39
Jullian	19	18-7-1	Rambouillet	123	134	11.0	0.39
Willies	36	1513	Rambouillet	72	83	11.0	0.39
Bell	33	W882	Rambouillet	112.5	123	10.5	0.38
Garson	42	1507	Rambouillet	103.5	114	10.5	0.38
Peterson	76	4251	Rambouillet	119.5	130	10.5	0.38
Forbes	57	2779	Rambouillet	89.5	99	9.5	0.34
Peterson	79	4231	Rambouillet	103.5	113	9.5	0.34
Bell	27	P902	Targhee	88	97	9.0	0.32
L. Rabel	64	377	Rambouillet	132	141	9.0	0.32
Peterson	73	4271	Rambouillet	99	108	9.0	0.32
Bell	24	B883	Columbia	91.5	99	7.5	0.27
Forbes	54	2774	Rambouillet	103.5	111	7.5	0.27
Ryan Boner	8	R811	Targhee	66.5	73	6.5	0.23
Brad Boner	2	Y805	Targhee	88	94	6.0	0.21
Ryan Boner	11	R838	Targhee	74	80	6.0	0.21
Brad Boner	6	Y846	Targhee	81	82	1.0	0.04
			Average	**101.63**	**113.57**	**11.94**	**0.43**