

Rambouillet ram performance testing and certification: 2023-2024 Dakota Ram Test

Rachel Gibbs¹, Christopher Schauer¹ and Jaelyn Whaley²

The Dakota Ram Test is a multistate ram performance testing program that evaluates ram wool and growth performance under centralized management. Data generated from this test serves as valuable selection tools to help producers identify rams with superior wool and/or growth performance. Rams are ranked by a productive index, and the top 30% are eligible for designation as Certified Rams as part of the American Rambouillet Sheep Breeders Association (ARSBA) Register of Merit (ROM) program.

Summary

Sheep producers throughout the northern Great Plains utilize the Dakota Ram Test to generate performance data on Rambouillet rams. This centralized performance test measures several economically important and/or heritable traits that producers can evaluate when selecting rams or genetic lineages to retain in their flocks. Forty-two Rambouillet rams completed the performance test at the Hettinger Research Extension Center (HREC) Sept. 21, 2023, to Feb. 8, 2024.

Fourteen rams had index scores in the top 30% of the performance test, and eight of them met the additional requirements for ARSBA Register of Merit.

Introduction

The Dakota Ram Test is a 140-day ram performance test that evaluates differences in ram wool and post-weaning growth performance under the same management conditions, nutritional plane and climate. The ARSBA recognizes high-performing Rambouillet rams participating in the Dakota Ram Test as Certified Rams in the ARSBA ROM Program, which can serve as a value-added marketing strategy.

Procedures

Forty-six spring-born registered Rambouillet rams were consigned by 12 producers and received by the HREC on or before Sept. 17, 2023. Before the test period, rams were evaluated for adherence to breed standards by the Dakota Ram Test committee, and scores for face wool, belly wool and wrinkle/skin fold (post-shearing) were collected. Scores were assigned on a four-unit basis (1-4), with higher scores representing a greater degree of wool covering or skin folding. To determine average daily gain (ADG), initial bodyweight

was recorded when the testing period began (Sept. 21, 2024), every 28 days and at the end of the testing period (Feb. 8, 2024). Rams were then shorn, staple length was measured and wool samples were collected on Feb. 9, 2024. Staple length was determined by averaging the length of wool at the shoulder, side and britch, and then was adjusted to estimate 365-day staple length (Adj. STL). Wool samples were sent to Texas A&M University for clean-fleece weight and fiber diameter (micron) analyses. Clean-fleece weight was determined from laboratory-scoured clean yield estimates and adjusted to estimate 365-day clean-fleece weight (Adj. CL FL) production. A real-time carcass ultrasound also was performed at the end of the testing period to estimate ribeye area and fat cover between the 12th and 13th ribs. Ram performance was estimated utilizing the approved productive index formula for the ARSBA's ROM program. This index includes adjustments for fiber diameter and fiber diameter variability, with positive scores indicating fleeces with a finer fiber diameter and reduced fiber diameter variability.

Index Score: $60*(ADG) + 4*(Adj. STL \text{ up to } 5.5") + 4*(Adj. CL FL) +/- \text{Fiber Diameter Adjustment} +/- \text{Variability Adjustment}$

Fiber Diameter Adjustment (-6 to 9 points available): Positive Adjustment when Fiber Diameter < 22 microns = $3*(22 - \text{Fiber Diameter})$. Negative Adjustment when Fiber Diameter > 22 microns = $-3*(\text{Fiber Diameter} - 22)$

¹NDSU Hettinger Research Extension Center

²SDSU Extension Lemmon Regional Center

Variability Adjustment (-5 to 5 points available): Positive Adjustment when Coefficient Variation < 22% = 1.25*(22 – Coefficient Variation). Negative Adjustment when Coefficient Variation > 22% = 1.25*(22 – Coefficient Variation)

Rams were ranked by index score, and the top 30% were

eligible for certification. Additional requirements for certification include: ADG ≥ 0.55lb/d, Adj. CL FL ≥ 9lb, Adj. STL ≥ 4", core fiber diameter ≤ 23.77 microns, face wool score ≤ 2.7pt, wrinkle/skin fold score ≤ 2.5pt, and QR or RR Codon 171 genotype for scrapie resistance.

Results and Discussion

Forty-two rams completed the 2023-2024 Dakota Ram Test following the removal of four rams by the Dakota Ram Test committee due to skeletal abnormalities inconsistent with the breed standard. Ram index scores ranged from 91.57 to 138.76 points and averaged 115.18 points (Table 1). Index scores of rams within

Table 1. Ram Performance Index Score Summary

Ear Tag	Reg. #	140-d ADG (lb/d)	Adj-STL (in)	CL FL (lb)	Adjustments		Index Score (pt)	Index Ratio
					Dia. (pt)	Var. (pt)		
W-2	1000855	1.08	5.3	13.40	-1.20	0.59	138.76	120%
W-13	1000883	1.00	5.2	11.27	2.18	5.00	132.98	115%
W-7	1000877	0.93	5.2	12.19	1.50	5.00	131.70	114%
W-6	1000876	0.92	5.3	13.92	-6.00	5.00	131.35	114%
W-16	1000985	1.04	4.7	14.56	-6.00	-2.97	130.82	114%
W-9	1000879	0.99	5.5	12.02	-5.10	5.00	129.11	112%
W-34	1000909	0.90	5.1	13.87	-6.00	5.00	128.85	112%
W-36	1000911	0.88	5.2	12.95	-3.23	3.94	125.95	109%
W-1	1000854	1.04	5.3	11.81	-5.93	0.94	125.88	109%
W-19	1000864	0.92	5.3	11.71	0.45	2.19	125.83	109%
W-39	1000914	0.86	5.5	11.84	-0.60	5.00	125.63	109%
W-15	1000984	0.92	5.4	12.81	-2.33	-4.25	121.71	106%
W-43	1000967	0.95	5.4	10.82	-3.23	2.28	121.06	105%
W-11	1000881	0.84	4.7	10.90	1.80	4.44	119.41	104%
W-40	1000952	0.74	5.3	0.04	-0.97	5.00	118.06	103%
W-14	1000884	0.91	5.0	0.05	-0.97	2.22	117.83	102%
W-26	1000872	0.76	5.0	0.04	-6.00	5.00	117.09	102%
W-27	1000921	0.83	5.2	0.04	-3.30	2.56	115.36	100%
W-23	1000932	0.97	5.3	0.05	-2.70	2.03	115.10	100%
W-37	1000912	0.85	5.2	0.04	1.13	4.09	114.67	100%
W-12	1000882	0.84	5.0	0.04	-3.08	5.00	114.56	99%
W-44	1000968	0.87	5.1	0.04	-3.83	5.00	114.53	99%
W-35	1000910	0.79	4.6	0.04	4.05	3.84	114.04	99%
W-5	1000875	0.79	5.1	0.04	-2.18	3.66	113.76	99%
W-38	1000913	0.67	5.3	0.04	2.85	4.13	113.47	99%
W-21	1000931	0.90	5.1	0.05	-6.00	1.13	112.17	97%
W-20	1000866	0.72	5.5	0.04	-4.88	-1.50	111.62	97%
W-24	1000929	0.94	4.1	0.04	-3.75	1.22	111.43	97%
W-28	1000922	0.89	4.3	0.04	1.65	2.91	110.03	96%
W-45	1000895	0.87	4.5	0.04	-2.18	3.44	109.56	95%
W-17	1000861	0.81	4.8	0.04	-6.00	5.00	108.99	95%
W-31	1000906	0.77	4.9	0.04	4.50	5.00	107.89	94%
W-25	1000871	0.89	4.7	0.04	-6.00	5.00	102.06	89%
W-41	1000953	0.76	4.1	0.03	-5.63	-0.41	101.84	88%
W-32	1000907	0.63	5.2	0.03	3.60	5.00	101.62	88%
W-10	1000880	0.84	4.1	0.03	-6.00	5.00	99.99	87%
W-18	1000863	0.89	4.0	0.04	-5.40	-1.66	96.03	83%
W-22	1000930	0.57	4.8	0.03	-0.68	2.53	90.41	78%

Double Line = Top 30% Cutoff

ADG, average daily gain; Adj. STL, adjusted staple length, Adj. CL FL, adjusted clean fleece

the top 30% ranged from 119.41 to 138.76 points. Of the rams scoring in the top 30%, eight of 14 met the additional requirements for ARSBA Certified Ram (Table 2). Six of the 14 index-eligible rams were ineligible for certification due to the fiber diameter requirement (five rams) or face wool cover score requirement (one ram). Growth performance was consistent with rams consigned to previous performance tests at the HREC. Rams averaged 97 pounds at the start of the

performance test period and gained, on average, 0.84 pounds per day over 140 days, averaging 216 pounds at the end of the test period. Carcass data presented in Table 3 is not included as part of the productive index but provides producers insight into ram growth and maturity patterns. Rams with larger ribeye areas indicate greater muscling and increased growth patterns, while rams with greater fat cover may indicate greater maturity.

Table 2. Eligibility for Certified Ram Designation

Ear Tag	Reg. #	Codon 171 Genotype	Index Score (pt)	140-d ADG (lb/d)	Adj. STL (in)	Adj. CL-FL (lb)	Belly Score (pt)	Face Score (pt)	Skin Score (pt)	Core Micron	Certified?
W-2	1000855	RR	138.76	1.08	5.3	13.40	1.00	1.00	1.00	22.40	Y
W-13	1000883	RR	132.98	1.00	5.2	11.27	1.00	1.00	1.00	21.28	Y
W-7	1000877	RR	131.70	0.93	5.2	12.19	1.00	1.00	1.00	21.50	Y
W-6	1000876	RR	131.35	0.92	5.3	13.92	1.00	1.00	1.00	24.60*	N
W-16	1000985	QR	130.82	1.04	4.7	14.56	1.00	1.50	2.00	25.95*	N
W-9	1000879	RR	129.11	0.99	5.5	12.02	1.00	1.50	1.25	23.70	Y
W-34	1000909	RR	128.85	0.90	5.1	13.87	1.00	1.25	1.25	24.15*	N
W-36	1000911	RR	125.95	0.88	5.2	12.95	1.00	1.00	1.00	23.08	Y
W-1	1000854	RR	125.88	1.04	5.3	11.81	1.00	1.00	1.00	23.98*	N
W-19	1000864	RR	125.83	0.92	5.3	11.71	1.00	1.00	1.00	21.85	Y
W-39	1000914	RR	125.63	0.86	5.5	11.84	1.00	1.00	1.00	22.20	Y
W-15	1000984	RR	121.71	0.92	5.4	12.81	1.00	3.00*	1.25	22.78	N
W-43	1000967	RR	121.06	0.95	5.4	10.82	1.00	1.25	1.25	23.08	Y
W-11	1000881	RR	119.41	0.84	4.7	10.90	1.00	1.00	1.50	21.40	Y

* = Does not meet certification requirement

ADG, average daily gain; Adj. STL, adjusted staple length, Adj. CL FL, adjusted clean fleece

Table 3. Ram Growth and Carcass Performance

Ear Tag	Reg. #	REA (sq. in.)	Fat Depth (in.)	Initial BW (lb)	Final BW (lb)	Gain (lb)	140-d ADG (lb/d)
W-2	1000855	3.75	0.52	85	236	151	1.08
W-1	1000854	4.00	0.34	99	245	146	1.04
W-16	1000985	3.72	0.35	100	246	146	1.04
W-13	1000883	3.30	0.27	96	236	140	1.00
W-9	1000879	3.44	0.29	92	230	138	0.99
W-23	1000932	2.81	0.19	83	219	136	0.97
W-43	1000967	3.18	0.27	103	236	133	0.95
W-24	1000929	2.99	0.25	94	226	132	0.94
W-7	1000877	3.75	0.29	109	239	130	0.93
W-6	1000876	3.36	0.41	101	230	129	0.92
W-15	1000984	2.76	0.25	74	203	129	0.92
W-19	1000864	2.84	0.31	79	208	129	0.92
W-14	1000884	3.75	0.37	96	223	127	0.91
W-21	1000931	2.36	0.38	70	196	126	0.90
W-34	1000909	3.04	0.35	113	239	126	0.90
W-25	1000871	2.98	0.33	96	221	125	0.89
W-18	1000863	3.41	0.16	72	196	124	0.89
W-28	1000922	3.52	0.23	85	209	124	0.89
W-36	1000911	2.84	0.35	121	244	123	0.88
W-44	1000968	2.79	0.33	104	226	122	0.87
W-45	1000895	2.62	0.31	106	228	122	0.87
W-39	1000914	3.04	0.29	119	240	121	0.86
W-37	1000912	2.87	0.31	99	218	119	0.85
W-11	1000881	3.12	0.29	97	215	118	0.84
W-10	1000880	4.05	0.21	102	219	117	0.84
W-12	1000882	3.43	0.21	103	220	117	0.84
W-27	1000921	3.16	0.29	86	202	116	0.83
W-17	1000861	2.59	0.33	112	226	114	0.81
W-5	1000875	2.67	0.23	93	204	111	0.79
W-35	1000910	2.68	0.27	80	190	110	0.79
W-31	1000906	2.68	0.29	104	212	108	0.77
W-26	1000872	2.87	0.27	125	231	106	0.76
W-41	1000953	3.33	3.44	106	212	106	0.76
W-40	1000952	2.03	0.21	102	205	103	0.74
W-42	1000966	2.79	0.19	102	205	103	0.74
W-8	1000878	3.61	0.40	93	195	102	0.73
W-20	1000866	2.53	0.21	90	191	101	0.72
W-29	1000904	3.18	0.33	102	201	99	0.71
W-38	1000913	2.74	0.27	102	196	94	0.67
W-32	1000907	2.64	0.23	100	188	88	0.63
W-22	1000930	2.31	0.21	92	172	80	0.57
W-33	1000908	2.85	0.25	118	186	68	0.49

REA, ribeye area; BW, bodyweight; ADG, average daily gain