Technical Report No. 302

CARCASS CHARACTERISTICS OF A BISON STEER (*BISON BISON*)

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ABSTRACT

Investigators from the Animal Science Department, Fisheries and Wildlife Department, and the Natural Resource Ecology Laboratory of Colorado State University took various biological and "commercial" measurements on a *Bison bison* steer slaughtered for meat. Results are tabulated and presented without analysis. Taste panel comparison is presented.

INTRODUCTION

The purpose of this technical report is to accumulate measurements made by the investigators so that these measurements will not be lost, but be available for others. Live weight and history of the buffalo slaughtered were supplied by Mr. Raymond Souther. Carcass measurements were supplied by Dr. David A. Cramer, CSU Animal Science Department, as were the taste panel results. Dr. Julius Nagy, CSU Fisheries and Wildlife Biology Department, further took other biological measurements of portions of the "drop." Dr. James Ellis of the Natural Resource Ecology Laboratory is responsible for the various skull measurements.

HISTORY

It became apparent that the animal from which measurements were taken was going to have to be disposed of because behavioral patterns were developing which could lead to disruption of experiments or injury to those working with the animal. This animal was a 5-year old bison steer whose ration consisted of:

6 to 6.5 lb. of 16% protein pellets per day

6% crude protein crested wheatgrass hay ad libitum and native shortgrass prairie ad libitum

This ration had not been altered for at least 180 days. No trouble was encountered loading or killing the animal. The animal was slaughtered on November 7, 1975 and cooler aged until November 14, 1975.

SUMMARY OF DATA COLLECTED FROM BUFFALO STEER BELONGING TO NREL

Slaughtered November 7, 1975

1. Dock wt.	= 1051.0 lb.	Carcass wt.:
2. Pluck wt. (without heart)	= 20.0 lb.	Right side = 316 lb. (hot)
Heart wt.	= 4.5 lb.	Left side = 322 lb. (hot)
3. Liver wt. (without bile)	= 9.0 lb.	
Bile wt.	= 1.5 lb.	
4. Full gastrointestinal tract wt.	= 159.0 lb.	
4 stomachs	= 92.5 lb.	
Remainder of gut	= 67.0 lb.	
5. Spleen	= 3.0 lb.	
6. Head wt.	= 61.0 lb.	
7. 4 shanks	= 19.0 lb.	
8. Hide	= 54.5 lb.	

Cut up data collected on November 14, 1975:

Left side (cold)		Right side (cold)	
Hindquarter	= 134 lb.	Hindquarter	= 146 lb.
Forequarter	= 167 lb.	Forequarter	= 163 lb.
TOTAL	301 lb.		309 lb.

Right side cut up data (bone in)

Round, untrimmed	= 60 lb.
Rump & loin, untrimmed	= 51 lb.
Rib, untrimmed	= 20 lb.
Chuck, untrimmed	= 100 lb.

Wrapped meat, total for both sides = 502 lb.

Hamburger	= 117 lb.	
Retail cuts	= 385 lb.	
Kidneys	= 2 lb.	together (not included in 502 lb. total)

Separate fat, lean, and bone of rib steak:

Rib from:	Total wt.	Fat wt.	Bone wt.	Total Lean wt.	Rib eye
Left side	147.29 g	58.04 g	30.68 g	58.57 g	38.93 g
% of total		39.41 %	20.83 %	39.76 %	26.31 %
Right side	113.40 g	44.26 g	14.58 g	54.56 g	31.92 g
% of total		39.03 %	12.86 %	48.11 %	28.15 %

Proximate analysis of rib steak:

	% Moisture	% Lipid	% Ash	% Protein
Left side adipose	7.83	87.91	0.42	3.84
Left side lean	71.46	3.00	1.10	24.44
Right side adipose	13.23	78.02	0.46	8.29
Right side lean	72.20	3.58	1.01	23.21

Carcass evaluation:

Fat thickness	Chine bone	Middle	Rib
Left side	1.3 inches	1.1 inches	0.7 inches
Right side	1.2 inches	0.9 inches	0.6 inches

Kidney knob = 12 lb.: 1.97% includes kidney

TASTE PANEL--FLAVOR, JUICINESS, AND SHEAR FORCE COMPARED TO BEEF STEERS

	Flavor[a/]	Juiciness[a/]	Shear force[b/]
Angus steer (control)	5.1	5.6	5.19
Galloway steer	4.7	3.6	5.45
Buffalo steer	4.4	5.7	10.99

[a/] The higher number was more desirable.

[b/] One-half inch core; lb. per sq. inch.

SOME ANATOMICAL MEASUREMENTS

	lb.	kg
Liver with bile	10.5	4.74
Liver without bile	9.0	4.08
Heart	4.5	2.04
Lungs with part of windpipe (4")	20.0	9.07
Spleen	3.0	1.36
Rumen-reticulum, omasum, abomasum, plus contents	92.5	41.73
Intestine, large and small, and mesenteric fat	79.0	3.58
Kidneys	2.0	0.91
Abomasum and contents	6.0	2.72
Abomasum without contents	4.0	1.81
Rumen and contents	71.0	32.21
Rumen without contents	16.5	7.48
Omasum and contents	16.0	7.26
Omasum without contents	3.9	1.77

SKULL MEASUREMENTS

Greatest length of skull	521 mm
Baislar length	474 mm
Alvealar length of molars	89 mm
Length of maxillary tooth row	148 mm
Alveolar width of incisors and canines	73 mm
Breadth at base of skull	220 mm
Breadth at widest part of skull (orbits)	294 mm
Depth of brain case	182 mm
Diameter of orbit	67 mm
Length of nasals	224 mm

Skull measurements made on cleaned skull with a steel tape accurate to 1 mm.

HEAD MEASUREMENTS

Tip of nose to point of skull	22 inches
Circumference of rostrum at back of nose pad	27 inches
Width of tooth row (incisors)	3 3/8 inches
Nose measurements:	
Nose pad	3 1/8 inches x 6 inches
Nostrils	3 inches wide x 1½ inches high
Width of mouth	5½ inches

Measurements made with a steel tape on uncleaned bison head with hide on skull after being severed from carcass. Accurate only to 0.5 inches.