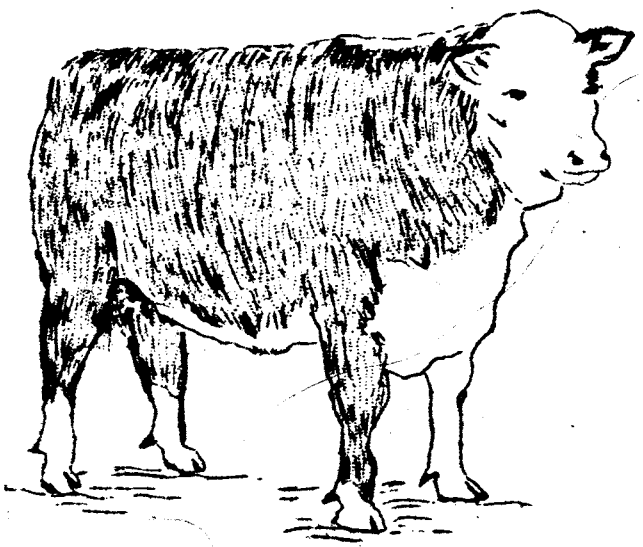
Miscellaneous Series Paper 246

Steer Feeding Experiment, Windsor, Colorado
Dec. 16, 1943 to Apr. 11, 1944



A COMPARISON OF AMMONIATED DRIED BEET PULP, UREA AND ALFALFA HAY AS SOURCES OF PROTEIN FOR FATTENING CATTLE

Aug. 23

Colorado Agricultural Experiment Station
Colorado State College
Fort Collins, Colorado

Homer J. Henney, Director

Miscellaneous Lots #246

WINDSOR STEER FEEDING EXPERIMENT

Colorado Agricultural Experiment Station, Ft. Collins, Colorado
Fed 112 days - Dec. 16, 1943 to Apr. 6, 1944
(Table based on one average steer)

Lot Number	1	2	3	4	5	6
Number of Steers	9	10	10	8	10	10
Feeds Fed: Salt and bonemeal fed in all lots	Gr.Snap Corn Gr.Barley Plain Pulp Gr.Oats Str. Vit. A Oil	Gr.Snap Corn Gr.Barley Plain Pulp Gr.Alf.Hay	Gr.Snap Corn Gr.Barley Plain Pulp Amm. Pulp Gr.Oats Str. Vit. A Oil	Gr.Snap Corn Gr.Barley Plain Pulp Amm. Pulp Gr.Alf.Hay Gr.Oats Str. Vit. A Oil	Gr.Snap Corn Gr.Barley Plain Pulp Urea Gr.Oats Str. Vit A Oil	Gr.Snap Corn Gr.Barley Plain Pulp Amm.Mol.Pulp Gr.Oats Str. Vit. A Oil
Initial Weight	926.8	926.8	924.9	916.1	919.8	927.7
Final Weight	1163.7	1187.9	1177.5	1166.6	1154.6	1191.5
Total Gain	236.9	261.3	252.6	250.4	234.8	263.8
Daily Gain	2.12	2.33	2.26	2.24	2.10	2.36
Average Daily Ration						
Ground Snapped Corn	5.57	5.64	5.64	5.64	5.57	5.64
Ground Barley	4.02	4.07	4.07	3.93	4.02	4.07
Plain Pulp	8.56	8.59	.08	2.90	8.37	.08
Ammoniated Pulp			8.59	5.71		
Amm. Molasses Pulp						8.59
Urea					.18	
Ground Alf. Hay		5.42		1.80		
Ground Oats Straw	5.35		5.42	3.62	5.35	5.42
Bone Meal	.10	.10	.10	.10	.10	.10
Salt	.10	.10	.10	.10	.10	.10
Vitamin A Oil (Int.Units)	487.50		487.50	257.37	487.50	487.50
Feed Required per Cwt. Gain						
Ground Snapped Corn	263.1	241.9	250.2	252.2	265.5	239.6
Ground Barley	189.9	174.5	180.5	175.6	191.6	172.9
Plain Pulp	404.7	368.3	3.6	129.5	399.5	3.5
Ammoniated Pulp			381.0	255.1		
Amm. Molasses Pulp						364.8
Urea					8.7	
Ground Alf. Hay		232.5		80.6		
Ground Oats Straw	252.9		240.5	161.9	255.1	230.3
Bone Meal	4.7	4.3	4.4	4.5	4.8	4.3
Salt	4.7	4.3	4.4	4.5	4.8	4.3
Vitamin A Oil (Int.Units)	23048.8		21615.2	11509.9	23253.8	20697.5
Feed Cost per Cwt. Gain	14.11	14.25	13.99	14.21	14.85	13.38
Appraised Feedlot Val.per Cwt.	15.40	15.70	15.50	15.60	15.60	15.50

Cooperators: Great Western Sugar Co., Windsor, Colo.
Quaker Oats Company, Chicago, Illinois.

WINDSOR STEER FEEDING EXPERIMENT
FINANCIAL STATEMENT BASED ON SALE OF STEERS
Colorado Agricultural Experiment Station, Ft. Collins, Colorado
Fed 117 days - Dec. 16, 1943 to Apr. 11, 1944
(Table based on one average steer)

Lot Number	1	2	3	4	5	6
Number of Steers	9	10	10	8	10	10
Feeds Fed: Salt and bonemeal fed in all lots	Gr.Snap Corn Gr.Barley Plain Pulp Gr.Oats Str. Vit.A Oil	Gr.Snap Corn Gr.Barley Plain Pulp Gr.Alf.Hay Gr.Oats Str. Vit.A Oil	Gr. Snap Corn Gr.Barley Plain Pulp Amm. Pulp Gr.Oats Str. Vit.A Oil	Gr.Snap Corn Gr.Barley Plain Pulp Amm. Pulp Gr.Alf.Hay Gr.Oats Str. Vit.A Oil	Gr.Snap Corn Gr.Barley Plain Pulp Urea Gr.Oats Str. Vit.A Oil	Gr. Snap Corn Gr.Barley Plain Pulp Amm.Mol.Pulp Gr.Oats Str. Vit.A Oil
Initial Weight	926.8	926.6	924.9	916.1	919.8	927.7
Market Wt. (Denver)	1117.8	1123.0	1122.0	1110.6	1101.0	1114.0
Total Market Gain	191.0	196.4	197.1	194.5	181.2	186.3
Daily Market Gain	1.63	1.68	1.68	1.66	1.55	1.59
*Percent Market Shrink	3.94	5.38	4.73	4.80	4.64	6.50
Cost per steer in feedlot @ $12.00 per cwt.	111.21	111.19	110.99	109.94	110.38	111.32
Feed Cost per steer	35.03	39.12	37.09	37.31	36.55	37.07
Est. fixed costs inc. int., labor, equip't.,etc.	16.01	16.08	16.09	17.98	16.07	16.09
Shipping & Selling expense	3.72	3.74	3.74	3.70	3.67	3.71
Total est. cost at market (Denver)	165.97	170.13	167.91	168.93	166.67	168.19
Total est. operating costs	54.76	58.94	56.92	58.99	56.29	56.87
Return per steer to cover est. operating costs	60.93	61.75	61.80	61.10	59.17	60.24
Price per cwt. flat (Denver)	15.40	15.40	15.40	15.40	15.40	15.40
Return per steer.	172.14	172.94	172.79	171.04	169.55	171.56
Est. profit per steer	6.17	2.81	4.88	2.11	2.88	3.37
Necessary selling price per cwt. to break even	14.85	15.15	14.97	15.21	15.14	15.10
Margin over purchase price needed to break even	2.85	3.15	2.97	3.21	3.14	3.10

Feed Costs Used (Grinding included in fixed costs above):

Snapped Corn	$33.80 per ton	Plain Pulp	$25.05 per ton	Bone Meal	$60.52 per ton
Barley	40.40 " "	Amm. Pulp	28.05 " "	Salt	16.14 " "
Oats Straw	4.52 " "	Amm.Mol.Pulp	28.05 " "	Vitamin A Oil	.20 per million units
Alfalfa Hay	16.00 " "	Urea	164.16 " "		

Cooperators: Great Western Sugar Company, Windsor, Colo.
Quaker Oats Company, Chicago, Illinois

*Based on feedlot weight Apr. 6 and market weight Apr. 11.

WINDSOR STEER FEEDING EXPERIMENT

SLAUGHTER DATA

Colorado Agricultural Experiment Station, Ft. Collins, Colorado
Slaughter and Grading at Armour & Co., Denver April 11, 1944
Report by Armour & Co. Personnel and U.S. Gov't Inspector

Lot Number	1	2	3	4	5	6
Number of Steers	9	10	10	8	10	10
Feeds Fed: Salt and bonemeal fed in all lots	Gr.Snap Corn Gr.Barley Plain Pulp Gr.Oats Str. Vit.A Oil	Gr.Snap Corn Gr.Barley Plain Pulp Gr.Alf.Hay	Gr.Snap Corn Gr.Barley Plain Pulp Amm. Pulp Gr.Oats Str. Vit.A Oil	Gr.Snap Corn Gr.Barley Plain Pulp Amm. Pulp Gr.Alf.Hay Gr.Oats Str. Vit. A Oil	Gr. Snap Corn Gr.Barley Plain Pulp Urea Gr.Oats Str. Vit. A Oil	Gr.Snap Corn Gr.Barley Plain Pulp Amm.Mol.Pulp Gr.Oats Str. Vit. A Oil
Live Weight	1117.8	1123.0	1122.0	1110.6	1101.0	1114.0
Dressed Weight (Cold)	691.7	703.9	677.3	680.0	670.2	668.1
Dressing Percent	61.9	62.7	60.4	61.2	60.9	60.0
Armour & Co. Carcass Grades						
Choice (-31	1	7	1	3	1	3
Choice (+32	4	3	3	1	2	2
Good (-32	4		6	4	7	4
Good (33						1
Government Carcass Grades						
AA	1	8	2	3	1	3
A	8	2	8	5	9	7
Inspection of Livers						
Abscess		2	3		2	2
Telangiectasis*	1		1		1	1
Livers Passed						
Number	9	8	7	8	8	8
Percent	100	80	70	100	80	80
Livers Condemned						
Number		2	3		2	2
Percent		20	30		20	20
Inspection of Heads						
Actinobacillosis				1		

Cooperators: Great Western Sugar Co., Windsor, Colo.
Quaker Oats Company, Chicago, Ill.

*Slight Cases - No livers condemned for telangiectasis.

WINDSOR STEER FEEDING EXPERIMENT
Colorado Agricultural Experiment Station, Ft. Collins, Colorado

Observations

1. The scarcity of feeds high in protein led to the comparison of urea, ammoniated dried beet pulp, and good quality alfalfa hay as sources of protein for a cattle fattening ration. Fleshy, two-year-old grade Hereford steers were used for this experiment. Lot 1 was fed on a low protein level of 7.7%. The protein level in the other lots was made up to 10.1% by adding alfalfa hay or ammoniated dried beet pulp or urea.

2. Because of the age and condition of fleshing of the feeder cattle used in this experiment it was a fattening rather than a growing test. The protein factor is probably less important in fattening than in growing cattle.

3. No highly significant differences in feedlot results were noted except Lot 1, fed the low-protein ration, and Lot 5, fed urea in the ration, dropped below the other lots slightly in appetite as reflected by feed consumption and consequently gains.

4. Lot 2, receiving alfalfa hay, was judged to be the top lot in the experiment. The carcasses dressed out an average of 62.7%, the highest in the test, and all graded Choice.

5. The addition of a small amount of alfalfa hay to ammoniated dried pulp showed a slight advantage in this experiment.

6. Ammoniated dried pulp was worth 114.5%, and ammoniated dried molasses pulp was worth 127.6% compared to plain pulp, based on feed requirement per cwt. gain produced in the feedlots. However when market weight differences at Denver were noted, the lot fed ammoniated dried molasses pulp showed a greater shrink than any other lot.

7. Urea, fed in crystal form at the rate of approximately .2 pound per head daily, proved inferior to any of the other sources of nitrogen. The lot in which urea was fed produced the lowest daily gain, required the greatest amount of feed per unit of gain and produced the poorest quality of carcasses of any lot in the test.

8. These steers were sold on a "draggy" market, and the selling price was the same for all lots. They were appraised, however, in the feedlot on April 6, and the differences here noted indicate the relative final appearance and finish of the steers in the different lots. This appraisal ranked the lots in order: 2 - 4 & 5 - 3 & 6 - 1.

9. The carcasses were judged by lots in the packing house and placed 2 - 4 - 3 - 6 - 1 - 5.

Cooperators: The Great Western Sugar Company, Windsor, Colorado
The Quaker Oats Company, Chicago, Illinois

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