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FEFDING STEERS

OF

DIFFERENT BREEDS.

By

J. Hackley Skinner.

Class 1901.

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Previous Work along this Line.

Very little work has been done in making a comparison of the different breeds on the basis of beef production alone. The only work along this line being done at this College. Comparisons have been made at other stations but they have in all instances taken steers and fed them only through the finishing period.

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Object of this Experiment.

There has always been more or less strife between the upholders of the different breeds each claiming that their individual breed was equal to or better than any other in the production of beef. It is the purpose of this experiment to set forth the difference in the cost of production and relative gains of each breed represented.

Plan of Experiment.

The effect of the different food stuffs has not entered into this experiment, the idea being to feed the steers alike using such a ration as would give the best results to all, especial attention being paid to the grain ration and accurate records of the grain kept. The only variety given in the grain was a difference in the proportions. The coarse fodder was varied when possible to give a good appetite. The rations at all times have been alike except the amounts, and variations made by the individual steer in the coarse fodder, with the exception of sugar beets when I fed either beets or silage whichever the individual steer liked best. No attempt was made to select steers of the beef breeds. They were taken from the stock on hand.

Length of Experiment.

The data used were taken from March 10, 1900 to April 13, 1901. I took care of the calves for some time before the experiment began in order to get used to them and as near as possible, get them all on the same kind of feed.

Food Stuffs.

The grain ration was composed of corn meal, ground oats and wheat bran, mixed in different proportions.

The coarse fodder was composed of mixed hay--timothy and clover--which has been of a good quality until the last eight weeks when it has been very poor making it difficult to get data as the steers insisted on using it for bedding.

For succulent food I have used roots and silage and grass when in season. A variety has been fed so as to induce them to eat heartily. In the data the roots and silage will appear together under the head of roots.

Specimens for the Experiment.

The plan was to secure as nearly as possible, typical specimens of the breeds represented. Although they varied somewhat in their ages. There was one animal of each of the six breeds. Brown Swiss, Galloway, Red Polled, Jersey, Holstein, and Shorthorn. I regret very much that it was impossible to have more than one animal of each breed as it is unfair to judge the whole breed by one specimen.

> Brown Swiss: Calved July 25, 1899. Sire: College Barton, 644. Dam: College Becky, 1859.

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Galloway: Calved Nov. 2, 1899.

Sire: Topsman.

Dam: Lilly of Bath, 11691.

Red Polled: Calved Jan. 1, 1900.

Sire: Silcox's Red Polled Bull.

Dam: Cara, 8393.

Jersey: Calved Nov. 29, 1899.

Sire: Topsman.

Dam: College Retta, 125893. Holstein: Calved Dec. 5, 1899.

Sire: Colantha Lad, 23883.

Dam: College Houwtje, 41762. Shorthorn: Calved Feb. 4, 1900.

Sire: Royal Mysie, 120959.

Dam: No. 89 of the "Grade Dairy Herd."

She was purchased of W. E. Boyden.

Dam was a high grade Shorthorn cow.

Care previous to Experiment.

Feb. 14, 1900 I put the calves into separate pens and tried to feed them the same as they had been fed. The Brown Swiss was getting all of the hay, silage and meal he would eat twice a day. The meal was composed of corn meal 150#, bran 100# mixed.

The Holstein was getting 7# of milk twice a day, with hay, silage and meal. .

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The Jersey was being fed the same as the Holstein. The Galloway was allowed to run by his mother's I side for a few days when he was taken away and tried for five days to get him to drink milk. At last he wound up by drinking water. He was eating hay, silage and meal.

The Red Polled and Shorthorn were fed whole milk for a few days when they were changed to separated milk with hay, silage, and meal, of which they ate very little, or none at all.

They all did well up to the time the experiment commenced notwithstanding the face that feed was changed several times.

Notes taken during the Experiment.

The experiment commenced on March 10th. A few days before, they were placed in the Experimental Barn, with a stall to each one, where they have staid until the present time.

This barn is a convenient place to carry on an experiment as it has water and other necessities handy. There was some difficulty in determining the amounts of the different food stuffs they would eat, the aim being to feed only such amounts as they would eat up clean. The ration was composed of corn meal, four parts; bran, two parts; ground oats, one part, with hay and roots. This was too much corn

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meal so it was changed to corn meal three parts; bran and oats, two parts each, which proved to be very satisfactory.

The health of the calves was very good; occasionally one would have an attack of diarrhoea, but at no time was I able to see that it made any appreciable difference in the gain. I was very careful to feed so there would be no cause for their going off feed.

About the first of June I began to take their feed away as it was not deemed advisable to grain them during the summer. The effect was the gains were quite small and decreased until they were turned out to pasture.

During the summer the calves were pastured in No. 18. When the dry season set in they were bearly able to hold their own. In August the Brown Swiss was taken out and fed grain preparatory to his going to the Fat Stock Show. He was cared for by the herdsman and crowded all that was possible. After the Exposition I again took him.

The calves were brought up to the barn Sept. 27, and stabled nights, having the run of the little paddock around the barn during the day. They were grained twice aday but as they were in very poor condition, they did not respond to their grain until after the middle of October. Notwithstanding the care received, I was ashamed to have them seen in their condition.

They were fed very carefully varying their roughage a so as to give them good appetite, supplementing the grain

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with roots. During the fall not one of them went off feed.

January 1st I began to force them and they have responded in good shape. The Holstein and Shorthorn seemed to be the most sensitive feeders as they went "off feed" more often than any of the others and it seemed to be more difficult to get them back again. In two instances it made a difference in their gains, but on the whole they have done remarkably well as their present conditions will show.

Explanation of Tables.

Table I. Gives the weights at the beginning of the experiment, at the close, with the total weight, weekly and daily gain.

Table II. Gives the total amount of grain, fodder, and roots consumed with the total cost for each steer.

Table III. Gives the grain, fodder, and roots required to put on 100# gain.

Table IV. Gives the cost per 100# of grain, fodder and roots.

Table V. Gives the total cost, cost per 100, and cost per pound.

Table VI. Gives the average daily ration, Nutritive ratio.

Table VII. Gives the average taken from the different tables, and shows what the steers did as a bunch. It shows

what can be done with a bunch of steers.

Table VIII. Gives the cost figuring them worth 4¢ at beginning of experiment. The selling price, the Brown Swiss and Galloway at $5\frac{1}{2}\phi$, Holstein at 4 3/4¢, the others at 4 1/2¢. The prices were placed at approximately what they would sell for as they now stand.

The prices taken were,

Corn meal,	\$14 ton,	7¢ 1b.
Oat meal	\$25 "	121¢ 16.
Wheat bran,	\$12.50 ton	6 1/4¢ 1b.
Mixed hay,	\$ 8 "	4¢ 1b.
Sugar beets,	\$2,50 "	.001 1/4 \$

Ration is composed of,

Corn Meal,	75#
Wheat bran,	25 #
Oat meal,	2 5#

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	Weights at begin- ing, #	Weights at end. #	Gain	'Weekly 'gain #	'Daily ' 'gain # '
Brown Swiss	550	1244	694	18.68	2.24
Galloway	270	8 88	618	14.	2.
Red Polled	.111	777	666	15.47	2.21
Jersey	130	731	601	13.44	1.92
Holstein	202	920	718	18.06	2.58
Shorthorn	91 .	800	• 709	16.1	1 2.3 1

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This table shows that the greatest gains are not necessarily made by steers of the beef type. The Holstein has made a remarkably good gain. He was of a beefy build.

Table II.

Feed Consumed.

	' Grain ' #	Fodder	Roots	Cost.
Brown Swiss	13762.5	1892.1	4452	\$44.10
Galloway	2499	1511	4452	32.03
Red Polled	1958	1372.7	1855	23.62
Jersey	2165.5	742	1484	. 22.52
Holstein	2535	1558.2	4426	32.51
Shorthom	2040	927	, 3081	26.11

We see here that the cost of gains approximately increase with the age of the animal.

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Table III.

Feed per 100# gain.

	' Grain	Fodder	Roots	' Total	1 1
	9 1	1 	r r	1 T	
Brown Swiss	543.1	272.6	641.5	1457.2	1
Galloway	404.3	244.3	720.3	1368.9	1
Red Polled	292.5	206.1	278.3	776.9	•
Jersey	360 .3	123.4	246.9	730.6	•
Holstein	353.	217	616.4	1186.4	1
Shorthorn	287.7	130	433.1	850.8	1

This table shows that there is a relation between the high daily gains and the amount of food consumed, but the question of age must be considered here also.

Table IV.

Cost per 100# gain of different food stuffs.

	' Grain	' Fodder	' Roots
Brown Swiss	\$4.46	\$1.08	* \$.80
Galloway	3.30	.98	.90
Red Polled	2.40	.82	.32
Jersey	2.94	.38	.26
Holstein	2.75	.90	.76
Shorthorn	2.35	,58 1	* . 54

The results of this table are interewting in that they show the relative cost of each food stuff for 100# gain.

Table V.

Total cost, cost for 100 and one pound gain.

	' Total	'P er 100	• Ber #
Brown Swiss	\$44.10	\$6.35	1 6.3¢
Galloway	32,03	, 5.1 8	5.7¢
Red Polled	23.62	3.54	• 3.5¢
Jersey	22,52	3,58	3. 5¢
Holstein	32,51	4.42	• 4.5¢
Shorthorn	' 26.5 1	• • 3 .4 7	• • 3.4¢

Table VI.

Average Daily Ration.

	' Grain ' #	Fodder	・ Roots. ・
Brown Swiss	12.21	6.76	15.9
Galloway	8,92	5.4	15.9
Red Polled	6.99	4.9	6.6
Jersey	7.73	2.6	' 5.3
Holstein	9,05	, 5.2	15.7
Shorthorn	• • 7.28	• 3.3	• 11.
	Nutrit J	ive Ratio, L : 7	I

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Table VII.

Average taken from the different tables, showing what the steers did as a bunch.

	; #	↓ ↓ # ↓	• #
Grain	• 373.4	8,69	1
Fodder	198.9	4.74	1
Roots	489.4	11.7	1
Daily gain	1	1	2.2 #
Average cost	1	1	\$30.14
Average selling price	1 1	1	\$43.46
Cost for 1#	7 9 9	T T T	\$ 4. 4¢

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'Value at 'beginnin 'of Exp.a '4ø per #	Cost of g'gain t'	'Total 'Cost	'Selling ' Price	'Profit
\$22.00	\$44.10	\$66.10	\$6 42	\$2. 32
10.80	32.03	42.83	48.84	6.01
4.44	23.62	28,06	34.96	6.90
5,20	22.52	27.72	32.89	5.17
8,08	32.51	40,59	43.70	• 3 <u>.</u>]]
' 3.64	26.51	• 30,15	• 32.00	' 1. 85
	Value at beginnin of Exp.a 4ø per 4 \$22.00 10.80 4.44 5.20 8.08 3.64	Value at Cost of beginning gain of Exp.at \$22.00 \$44.10 10.80 32.03 4.44 23.62 5.20 22.52 8.08 32.51 3.64 26.51	Value at 'Cost of beginning gain Total Cost 'beginning gain Cost of Exp.at 'Cost '\$22.00 \$44.10 \$66.10 10.80 32.03 4.44 23.62 5.20 22.52 8.08 32.51 40.59 3.64 26.51	Value at cost of beginning gain Total cost Selling Price of Exp.at 22.00 \$44.10 \$66.10 \$6 .42 10.80 32.03 42.83 48.84 4.44 23.62 28.06 34.96 5.20 22.52 27.72 32.89 8.08 32.51 40.59 43.70 3.64 26.51 30.15 32.00

We see here that some of the steers have been fed at a profit and others at a loss. But this table should not be considered as it is simply a "trial balance". The steers are not ready for the market.

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Relative gains and present condition.

The steer giving the most economical returns is the Shorthorn, the youngest in the bunch, and to all appearances the hardest feeder. These gains may be due to the fact that being the youngest he could put on flesh the cheapest, but conditions have been against him in that he has been off feed oftener, and for longer periods than any of the others. Even in his present condition it is difficult to say exactly where he has placed the gains as it will take mearly a year to put him in shape for the market.

The Red Polled comes next as an economical feeder, but like the Shorthorn he does not show near the finish the others do. He is what would be called a good feeder being growthy though not very large, and a tendency to place flesh in the highest priced cuts.

The Holstein leads in having the highest daily gain and he has done remarkably well having hind quarters that would be hard to beat. He has the foundation for a very heavy steer if fed until matured.

The Jersey has upheld his breed remarkably well, although his gain is the smallest. His rump and loins are well covered considering the breed and although rather large in the belly, the flesh seems to be placed upon the ribs rather than the intestines.

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The Galloway, the only strictly beef breed in the test, is to be sure the more nearly finished, in fact with about six weeks more feeding would make excellent Baby Beef. This is probably due to the fact that it is characteristic of the breed to mature early, but it is rather against him that he has not put on more economical gains.

The Brown Swiss can not be judged too severely for his gains because of his show experiences, but never-the-less as to finish he has been a credit to the Dairy breeds, and then his gains are probably effected by his age, being the oldest.

Slaughter Test.

All of the assumptions in regard to finish and placing of flesh have been from the steers on the hoof, and they would be subject to change under a slaughter test which is the ultimate end of such an experiment to fairly judge the animals, as a block test is the only fair way to judge a fat animal and it is not unusual for a bullock to be first on the block which was not first on the hoof.

Conclusions.

1. The experiment shows that there is primarily not much difference in the cost of raising steers of different

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breeds.

2. That the superiority of the beef breeds, if there is any, lies in their early maturity and manner of laying on flesh.

3. That prejudice, due to a lack of information, is often the basis upon which we estimate the comparative value of the breeds.

4. The gain is no index of the amount of food consumed.

5. That large gains are not necessarily economical ones.

6. That animals of the beef type do not necessarily make the largest and most economical gains.

7. The confirmation of a steer judged from his appearance does not always determine whether he is an economical feeder.

8. That up to a certain age, the growing period, the Dairy breeds will put on more economical gains than the beef breeds.

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