

South Dakota State University
**Open PRAIRIE: Open Public Research Access Institutional
Repository and Information Exchange**

Bulletins

South Dakota State University Agricultural
Experiment Station

11-1-1910

Fattening Steers of Different Ages

James W. Wilson

Follow this and additional works at: http://openprairie.sdstate.edu/agexperimentsta_bulletins

Recommended Citation

Wilson, James W., "Fattening Steers of Different Ages" (1910). *Bulletins*. Paper 125.
http://openprairie.sdstate.edu/agexperimentsta_bulletins/125

This Bulletin is brought to you for free and open access by the South Dakota State University Agricultural Experiment Station at Open PRAIRIE: Open Public Research Access Institutional Repository and Information Exchange. It has been accepted for inclusion in Bulletins by an authorized administrator of Open PRAIRIE: Open Public Research Access Institutional Repository and Information Exchange. For more information, please contact michael.biondo@sdstate.edu.

BULLETIN NO. 125.

MARCH, 1911.

AGRICULTURAL EXPERIMENT STATION

SOUTH DAKOTA STATE COLLEGE OF AGRICULTURE
AND MECHANIC ARTS

DEPARTMENT OF ANIMAL HUSBANDRY

Fattening Steers of Different Ages

BROOKINGS, SOUTH DAKOTA

From the Press of the
Mitchell Publishing Company
Mitchell, S. D.

GOVERNING BOARD

Hon. A. E. Hitchcock, President.....Mitchell, S. D.
Hon. P. W. Dwight, Vice President....Sioux Falls, S. D.
Hon. A. M. Anderson.....Sturgis, S. D.
Hon. August Frieburg.....Beresford, S. D.
Hon. H. Reinhardt.....Eureka, S. D.

STATION STAFF

A. E. Hitchcock.....Regent Member
P. W. Dwight.....Regent Member
Robert L. Slagle.....President of College
James W. Wilson....Director and Animal Husbandman
N. E. Hansen.....Vice Director and Horticulturist
James H. Shepard.....Chemist
E. W. Olive.....Botanist
E. L. Moore.....Veterinarian
C. Larsen.....Dairy Husbandman
Clifford Willis.....Agronomist and Supt. of Substations
S. Garver, Assistant in Agronomy, Cottonwood Substation
C. M. Woodworth.....Eureka Substation
M. Champlin.....
(Co-operative) Asst. in Agronomy, Highmore Substation
J. V. Bopp.....Assistant Chief in Agronomy
W. L. Burlison,.....Chief Assistant in Agronomy
W. D. Griggs.....First Assistant in Agronomy
H. H. Biggar.....Assistant in Agronomy
O. E. White.....Assistant in Botany
J. H. Sarvis.....Assistant in Botany
William White.....Assistant in Dairying
D. E. Bailey.....Assistant in Dairying
Howard Loomis.....Assistant in Agronomy
R. A. Larson.....Secretary and Accountant
M. M. Johnson.....Bulletin Clerk and Stenographer

SUMMARY

1. Hogs made more gain following three year old steers than when following yearling steers.

2. The younger the steer the fewer the pounds of feed for a pound of gain.

3. The loss in shipping per head was greater when the cattle were fed sheaf oats enroute than when they were fed prairie hay.

4. The largest gain for feed consumed was made during the first thirty days when the steers were being put on full feed.

5. A longer feeding period was required to get yearling steers in a good marketable condition than was required for the two year old or the three year old steers.

6. More grain was required for a pound of gain during cold than moderate weather, indicating that a large per cent of the feed was required for maintaining body heat.

7. Deducting the gain made by steer No. 1, in the two year old lot of the first experiment, as it was much below the average for the two year old steers, only six pounds more gain was made by the three year olds than the two years old, and only nine pounds more was made by the two year olds than the yearlings per head, showing that practically equal gains can be made with steers of different ages under the same conditions.

8. When mixed with oil-meal, one-tenth by weight, the three year old steers consumed an average of forty-five bushels, the two year olds an average of forty bushels and the yearlings an average of thirty-four bushels of corn per head during the feeding period of 127 days.

9. With the three year old and the two year old lots a pound of pork was made for every five pounds of beef produced, while with the yearling lots one pound of pork was made for every nine pounds of beef. The production of pork being an important item in steer feeding operations, and as experiments show that it is not profitable to grind corn for steers (unless to increase the palatability), the combined gain of both cattle and hogs should be considered by the prospective feeder.

FATTENING STEERS OF DIFFERENT AGES

James W. Wilson

The object of this experiment was to ascertain the gain to be made on steers of the same quality, under the same conditions, with the same kind of a grain ration but of different ages. It was also desired to determine the difference in the production of pork for feed consumed with shotes following the different aged steers.

In recent years expert judges of livestock at some of our principal expositions have given prominent places to the young and immature over the old and more mature animals, indicating that the demand in the market has changed from what it was several years ago.

History shows that early maturity was a desirable character in the origination and improvement of all of our principal breeds of beef cattle. This character should not be lost sight of by the breeder of pure-bred livestock. The butchers also have been favoring the well fattened calf and yearling, until today the prices paid for these classes are not much lower than that paid for the older animals that yield larger cuts. In recent years the improved methods of cooking are undoubtedly partially responsible for the increased demand for smaller cuts. It remains to be seen whether the finishing and marketing of our cattle at the younger ages will become the practice on the high priced land, where the grains and the cattle will be raised in the future.

As an economical utilizer of roughage, the growing steer has a place wherever the intensive system of farming is practiced.

THE EXPERIMENT

The experiment covered two years feeding of one hundred and twenty seven days each. The first trial began December 17th, and the second March 2nd, thus giving results both for the cold winter months, and for the spring and early summer.

The cattle for each trial were selected in the open markets and consisted of six yearlings, six two year old and six three year old steers, as equal in quality condition and weight as it was possible to get them. The lots for the 1909 experiment was secured in the Sioux City market and were home-bred cattle. Those for the 1910 experiment were selected in the Omaha market and were branded, range-bred cattle, not so quiet as those in the 1909 test, and were a few pounds lighter per head.

In each case the steers were dipped before shipping to the Experiment Station. They were fed a few days on a light ration to become accustomed to their grains; this method was found to be valuable, especially with the range-bred lots. They were weighed individually on three successive days and the average weight taken as the initial weight of the experiments. They were also weighed individually at certain intervals thereafter to note the gain or loss.

At the close of the tests they were shipped to the Chicago market and sold on their merits. These steers were not fancy in quality, but the average of the general run of cattle in the markets. Either of the lots did not top the market in Chicago when well finished. The length of the feeding period for these steers probably was a trifle longer than is usual but earlier marketing would have placed them in the "warmed up" class of cattle. This was especially true of the yearlings.

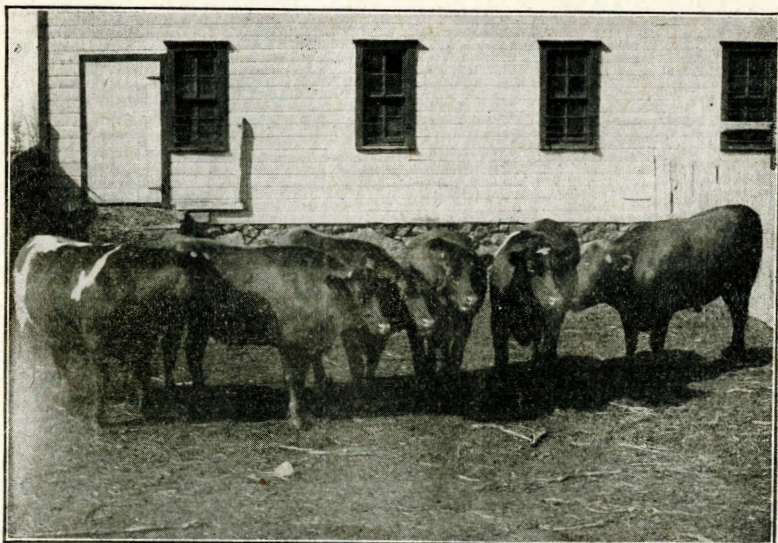
FEED

The feed for each lot was the same throughout. It consisted of upland prairie hay, shelled corn and linseed

meal. One-tenth as much linseed meal was given each lot daily as it would eat of shelled corn and all the hay it would eat. Probably better gains would have been obtained with more oil meal, but when we consider the price of the proteinaceous by-products in the market, care must be taken in their feeding.

This ration would have been better balanced with clover and alfalfa hay, the cheapest source for protein in South Dakota, and the gains undoubtedly would have been larger. The hay and grain were weighed both morning and evening and each lot was allowed the use of an open shed and a small yard.

Enough hogs were put in each yard to pick up the waste.



5 2 1 3 6 4

Six three year old home-bred steers used in experiment of 1908-09, beginning Dec. 17th.

	Pounds
Average weight at beginning.....	1121
Average weight at close.....	1441
Average gain per head.....	320
Average gain per head, daily.....	2.52
Number of days fed.....	127
Corn required for pound of gain.....	7.42
Hay required for pound of gain.....	5.81
Oilmeal for pound of gain.....	.73
When mixed with oilmeal one-tenth by weight average gain for bushel of corn.....	7.5
Average bushels of corn consumed per head.....	42
Average pounds of hay consumed per head.....	1865
Average pounds of pork produced per steer.....	72
Cost per hundred shipping to market.....	42 cts
Average loss per head in shipping 586 miles to market	61



1 5 3 6 2 4

Six two-year old home-bred steers used in experiment of 1908-09, beginning Dec. 17th.

	Pounds
Average weight at beginning.....	877
Average weight at close.....	1181
Average gain per head.....	304
Average gain per head, daily.....	2.39
Number of days fed.....	127
Corn required for pound of gain.....	6.53
Hay required for pound of gain.....	5.80
Oilmeal for pound of gain.....	.64
When mixed with oilmeal one-tenth by weight average gain for bushel of corn.....	8.5
Average bushels of corn consumed per head.....	35
Average pounds of hay consumed per head.....	1766
Average pounds of pork produced per steer.....	61
Cost per hundred shipping to market.....	42 cts
Average loss per head in shipping 586 miles to market	56



4 5 1 6 3 2

Six yearling home-bred steers used in experiment of
1908-09, beginning Dec. 17th.

	Pounds
Average weight at beginning.....	749
Average weight at close.....	1064
Average gain per head.....	315
Average gain per head, daily.....	2.48
Number of days fed.....	127
Corn required for pound of gain.....	5.63
Hay required for pound of gain.....	4.32
Oilmeal for pound of gain.....	.55
When mixed with oilmeal one-tenth by weight average gain for bushel of corn.....	9.9
Average bushels of corn consumed per head.....	31
Average pounds of hay consumed per head.....	1363
Average pounds of pork produced per steer.....	21.
Cost per hundred shipping to market.....	42 cts
Average loss per head in shipping 586 miles to market	37



3 4 5 2 6 1

Six three year old range-bred steers used in experiment of 1910, beginning March 2. Pounds

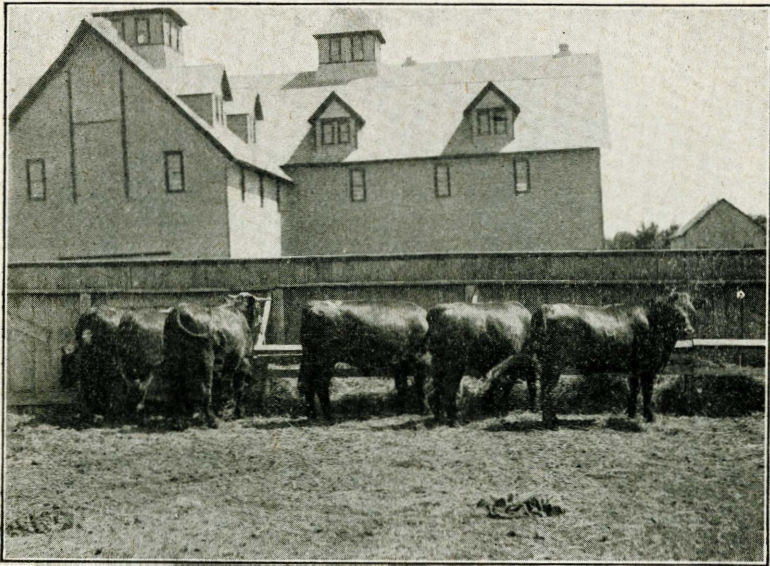
Average weight at beginning.....	980
Average weight at close.....	1326
Average gain per head.....	346
Average gain per head, daily.....	2.72
Number of days fed.....	127
Corn required for pound of gain.....	8.00
Hay required for pound of gain.....	4.34
Oilmeal for pound of gain.....	.79
When mixed with oilmeal one-tenth by weight average gain for bushel of corn.....	7.00
Average bushels of corn consumed per head.....	49
Average pound of hay consumed per head.....	1523
Average pounds of pork produced per steer.....	58
Cost per hundred shipping to market.....	45 cts
Average loss per head in shipping 586 miles to market	53
Dressed weight	61.98 per cent



4 3 6 2 5 1

Six two year old range-bred steers used in experiment of 1910, beginning March 2.

Average weight at beginning.....	806
Average weight at close.....	1130
Average gain per head.....	324
Average gain per head, daily.....	2.55
Number of days fed.....	127
Corn required for pound of gain.....	7.80
Hay required for pound of gain.....	3.57
Oilmeal for pound of gain.....	.78
When mixed with oilmeal one-tenth by weight average gain for bushel of corn.....	7.20
Average bushels of corn consumed per head.....	45
Average pounds of hay consumed per head.....	1523
Average pounds of pork produced per steer.....	62
Cost per hundred shipping to market.....	45 cts
Average loss per head in shipping 586 miles to market	49
Dressed weight	59.69 per cent



2 4 1 5 3 6

Six yearling range-bred steers used in experiment of 1910, beginning March 2.		Pounds
Average weight at beginning.....	616	
Average weight at close.....	937	
Average gain per head.....	321	
Average gain per head, daily.....	2.52	
Number of days fed.....	127	
Corn required for pound of gain.....	6.60	
Hay required for pound of gain.....	2.70	
Oilmeal for pound of gain.....	.66	
When mixed with oilmeal one-tenth by weight		
average gain for bushel of corn.....	8.5	
Average bushels of corn consumed per head.....	37	
Average pounds of hay consumed per head.....	867	
Average pounds of pork produced per steer.....	43	
Cost per hundred shipping to market.....	45 cts	
Average loss per head in shipping 586 miles		
market	39	
Dressed weight	58.68 per cent	

TABLE No I.
Individual Gains by Periods

1908-9							1910						
Three Year Old Lot							Three Year Old Lot						
No of Steer	Gain 1st 30 days	Gain 2nd 30 days	Gain 3rd 30 days	Gain last 37 days	Gain per head	Gain per head daily	No of Steer	Gain 1st 30 days	Gain 2nd 30 days	Gain 3rd 30 days	Gain last 37 days	Gain per head	Gain per head daily
1	89	96	66	75	326	2.56	1	90	120	128	45	383	3.01
2	132	80	58	41	311	2.44	2	125	-16	118	75	302	2.37
3	92	38	62	80	272	2.14	3	120	46	32	79	277	2.18
4	123	58	4	131	316	2.48	4	94	64	122	76	356	2.80
5	115	82	74	107	378	2.97	5	121	80	86	64	351	2.76
6	144	60	20	98	322	2.53	6	140	78	76	115	409	3.22
Ave.	116	69	47	87	341	2.52		115	62	93	72	346	2.72
Two Year Old Lot							Two Year Old Lot						
1	49	30	38	59	176	1.38	1	63	124	80	117	384	3.02
2	118	82	98	77	375	2.95	2	6	90	90	88	274	2.15
3	109	76	76	83	344	2.70	3	136	62	72	72	342	2.69
4	119	38	116	71	344	2.70	4	78	56	108	67	309	2.43
5	144	32	42	102	320	2.51	5	97	88	56	84	325	2.55
6	127	60	100	-19	268	2.11	6	60	90	24	138	312	2.45
Ave.	111	53	78	55	304	2.39		73	85	71	94	324	2.55
Yearling Lot							Yearling Lot						
1	117	80	76	65	338	2.66	1	90	60	74	69	293	2.30
2	49	52	88	89	278	2.11	2	75	58	64	67	264	2.07
3	117	50	72	69	308	2.42	3	82	82	64	76	304	2.38
4	89	34	54	110	287	2.25	4	88	100	92	70	350	2.75
5	97	72	70	85	324	2.55	5	88	76	106	87	357	2.81
6	119	68	78	93	358	2.81	6	119	64	86	90	359	2.82
Ave.	98	59	71	85	315	2.48		90	73	81	76	321	2.52

Table No. 1 includes a record of the gain made by each steer in both experiments. This table shows that all the steers except one made a good gain, also that twenty-three of the thirty-six head made the largest gain during the first thirty days of the feeding period. During the first period the grain allowance was increased gradually until the three-year old lots were receiving an average of fifteen pounds; the two-year old lots an average of twelve pounds; and the yearling lots an average of eleven pounds per head daily. The record further shows that the average gain per head, daily, of the range-bred steers, or the lots for the 1910 experiment, was greater for each lot than the average gain for the home-bred cattle. Every-

thing considered, the seasonal conditions probably had an influence on the gains as a pound more of concentrates for a pound of gain was required during the cold weather of the first experiment than was required in the second experiment. This extra feed evidently was utilized in keeping up body heat, a factor worth considering in fattening operations.

Deducting the gain made by steer number one in the two year old lot of the 1908-09 experiment, as it was much below the average gain for the two lots, the general average gain per head for the two lots, both experiments, would be three year olds 333, two year olds 327 and yearlings 318 pounds, showing that average gains made by older lots are nearer equal than average gains made by the two younger lots.

TABLE No. II.
Totals and Averages.

	Total pounds concentrates fed	Total gain	Ave. Lbs. of concentrates for pound of gain	Total pounds of hay fed	Average Lbs. of hay for pound of gain	Pounds pork produced	Ave. Lbs. concentrates for pound of pork
Twelve Three-year Old Steers..	33978	4003	8.48	20329	5.08	782	43.4
Twelve Two-year Old Steers....	29833	3773	7.90	17543	4.64	738	40.4
Twelve Yearling Steers.....	25711	3820	6.73	16602	4.34	389	66.1

The above table shows the total pounds of feed consumed, total gain, total pounds of pork produced, and average pounds of each for pound of gain for both cattle and hogs, for both lots in both experiments.

The younger the animal, the smaller the quantity of

grain and hay consumed for a pound of gain. More grain was required for a pound of pork with the yearling lots than with the two-year old or the three-year old lots. Evidently the yearling steers received more nutriment than the older lots from the grain eaten, thereby furnishing less feed for the shotes following.

Fewer hogs of practically the same weight at beginning were required to clean up after the yearling lots, than with other lots and the average gains were similar for each lot.

The advantage in feeding one kind of steers over the other depends on the final returns, which includes (1) the difference in value of the gains made by both steers and hogs (2) the increase in value of the original weight and (3) the cost of producing the gain. For this purpose we place a value on the concentrates at one cent a pound and the hay at eight dollars a ton. The average cost of the steers at the beginning was as follows: the three-year olds \$5.22, the two year olds \$4.92 and the yearlings \$4.81 per hundred pounds.

TABLE III.

	Twelve three-year olds	Twelve two-year olds	Twelve Yearlings
Value of Increase in Price of Original Weight....	\$193.86	\$144.82	\$130.50
Value of Gain on Cattle.....	274.48	243.38	248.38
Value of Increase in Price of Hogs.....	17.67	15.50	10.42
Value on Gain on Hogs.....	51.32	48.92	26.27
Cost of Feed.....	339.78	298.33	257.11
Average Profit per Head.....	16.46	12.85	13.20

The statements in the above table are based on the actual, but much above the average, prices received for grains and also cattle in South Dakota. It includes the profits made by the several middlemen, where the stock was purchased.

The profit on both three-year old lots was larger than the profit on either the two-year old or yearling lots. While the average gain for the yearling steers was nearly as large as for the older lots, part of this gain might have been put on with cheaper feed, such as corn stalks and straw, which on some of our South Dakota farms is considered of no value, and burned. This burning of corn stalks and straw is a bad practice, and in time will deplete any farm of its fertility.

In some countries when a farm is rented the lessor provides that the roughages of this nature must be worked into manure with live-stock and put back on the farm. Experimenters have found that the manure made by steers during a six months' feeding period is worth from nine to eighteen dollars per head, depending on the condition of the land on which the manure is to be placed. This, then, is an additional item to be credited to the profit of the older lots in case the steers were raised on the feeders' farm.

SHIPPING TO MARKET

The loss in shipping to market, a distance of 586 miles, was not great, being largest per head for the oldest cattle. In both cases the cars were bedded heavily with straw. In the first experiment the racks in the car were filled with sheaf oats, and in the second the racks were filled with prairie hay. On arrival at the yards they were fed hay, and watered, with the following results, based on the last average weight of the steers at the close of the experiments.

TABLE IV.
Average Loss in Pounds Per Head

	Three year olds	Two year olds	Yearlings
Sheaf Oats.....	61	55	37
Prairie Hay.....	53	49	39