A Hog Feeding Experiment,

By

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Fifty head of hogs bought, fattened, sold and slaughtered.

Introductory.

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A Hog Feeding Experiment.

All hog raisers who are abreast of the times know that there has been a very great change during the past few years in the class of hogs demanded by the market. This change has not come without cause, nor has it been sudden and sweeping. It has, however, made its appearance, and is still lingering among the backwoods farmers. A few years ago, the farmer kept his hogs until two and three and even four years old, fattened them out on corn at from four to six hundred pounds per head, and received the top of the market for them. The hog raiser now knows that his profitable hog is sold on the market at a weight of from 180 to 225 pounds, and the quicker he can get his hogs to that weight the more profitable it is for him. The farmer has

been brought to a realization of this fact in several ways. When he takes a load of hogs to Chicago, Kansas City, Omaha or St. Joseph, he finds that hogs weighing from 180 to 225 pounds are the most ready sale and bring the top of the market. He understands that the reason of this is that various other products are taking the place of the lard that made the heavy, fat hogs desirable. While now it is the bacon hog - the lean hog, with good hams, and shoulders, and plenty of tender-loin, that is desired. Such hogs are also more desirable because they are less likely to be diseased, and are of more convenient size to handle. The farmer has also learned that there is a great risk to run in keeping hogs any length of time. Cholera may invade his pens, and is more apt to, where hogs have been kept for a long time. So it

seems that the change in a few respects has been a favorable one to the farmer. Prof. W.A. Henry, of the Wisconsin Experiment Station, shows that it requires ⅓ more feed to put the same amount of gain on a 350 pound hog than it does on one weighing 225 pounds.

Hence from the foregoing, it would seem that an experiment to be of any real practical value in hog feeding, must be with the class of hogs that the farmer must put on the market, and must be conducted under the conditions that the ordinary farmer is confronted with.

As a result of the change, there have arisen conditions that puzzle many farmers, and they need the help of the experiment stations. The class of hogs the market now demands must be fattened while young. The highly carbonaceous character of our staple hog feeds — corn and kaffir-

in many cases, give unsatisfactory results in fattening young hogs. Nearly every farmer has met with this experience, but, not being able to understand the cause has not been able to apply any remedy. Here is where the work of the stations should step in, and not only show the farmer the folly of attempting to fatten young hogs on corn or kaffir alone, but show them a better way, and explain the cause of the trouble.

From February 28, to April 19, 1899, the Farm Department conducted an experiment in feeding fifty head of hogs to ascertain the value and influence of feeding, in addition to the highly carbonaceous feed, some feed rich in protein. The feeds chosen for this purpose were those remarkably adapted to the drier parts of Kansas, and will undoubtedly do better over a larger part of the State than any other three crops.

Kafir was used as the principal feed, being fed both ground and unground in comparison. Alfalfa hay and soy beans were used as the additional feeds, and were fed as follows: whole kafir and alfalfa hay, kafir meal and alfalfa hay, four-fifths kafir meal and one fifth soy bean meal, kafir, whole alone and kafir meal alone. The five different feeds give the following comparison; ground vs unground kafir, kafir alone ground and unground vs alfalfa hay and kafir ground and unground, 4/5 kafir and 1/5 soy bean meal vs kafir and alfalfa, also vs kafir alone.

The hogs used in this experiment had to be bought of the farmers in the vicinity of Manhattan, and an attempt was made to obtain hogs as uniform as possible in every particular. However, no attempt was made to discriminate as to breeds, and little importance attached

to age, as such characters cannot be depended on beyond the judgement of the buyer. The limitations in buying were, good thrifty hogs not varying over 15 lbs. on either side of 125.

The first bunch arrived at the barn February 19, and the last bunch February 24. Five extras were purchased, and the average weight of the fifty-five head as they arrived at the barn was 125.8 lbs., and cost $3.56 per hundred pounds. There was little chance for choice in purchasing, as that class of hogs was found to be not very plentiful at that time; and hence the uniformity was not as good as it might have been. Yet on the whole, they were a very good bunch of hogs. They varied considerably in degree of flesh - more than they did in weight, and in breed from the long nosed mongrel up to the high grade Berk and Poland.

The day the last bunch arrived the

work of dividing them into lots began. This is a very important operation, and with a large bunch of hogs is no little job. It is very important that the hogs in each lot be similar in every particular. The saying that "a hog is a hog, no matter where you put it", does not hold true as to their fattening qualities. Two hogs may appear very similar, and yet not feed the same at all. So it is very important that there be as little variation as possible, as a large variation might make the results entirely unreliable, and the experiment misleading. To accomplish this task each hog was weighed separately, and a short description taken, as to condition, build, sex and any other marked character. The following, are a few of the descriptions, and will explain themselves.

Poland China Barrow, (P.C.B.) Wt. 138, Long, good shape.

Poland China Barrow (P.C.B.) Wt. 116, Short Chunk.

Poland China Sow (P.C.S.) Wt. 135. Long, slim, good shape.
Berkshire Sow (B.S.) Wt. 129, Long, slim, fair shape.
Berkshire Barrow (B.B.) Wt. 140 Medium, short, fat.

After this was done, the weights and descriptions were arranged in five groups, by taking the heaviest weight first, for group one, the second heaviest for group two, and so on To group five in which was placed the fifth and sixth heaviest. The seventh heaviest to group four, and so on by alternating back and fourth, taking the heaviest remaining weight each time. When the fifty hogs were thus grouped, the total weight of the lots varied very little. The descriptions were also carried along and changes made where necessary to more evenly balance the quality of the hogs of the lots, also sex or any other noticable difference. To facilitate changing and keeping individuals

separate, each hog was numbered by notching the ears. When the division into groups was satisfactorily completed, the greatest difference in weight between any two of the lots was 17 lbs., and to all appearances, other differences were at no greater ratio.

The hogs were put in open pens 16 X 48, with a 12 ft. shed at the north end, which had been previously used as a steer shed, and was open on the south. Loose boards were tacked up during the worst storms to keep the snow from blowing in on the hogs. The feeding was done in V shaped troughs at the front end of the pens, except on the worst days when short troughs were put under the sheds, and the hogs fed there. Two of the pens were some little distance from the other three but were similar in every respect.

A group of the hogs was driven into each of the five pens and the groups designated as lots I, II, III,

IV, and V, and were fed as follows:
Lot I, Kafir whole and alfalfa hay.
Lot II, " meal " " ".
Lot III, " " 4/5, soy bean meal 1/5
Lot IV, " whole alone.
Lot V, " meal alone.

As a preliminary feeding, as the hogs arrived at the barn, they were all fed together, and fed intended to bring them into good feeding condition. Kafir, with the addition of some soy bean meal, and an ounce per feed per hog of dried blood, and occasionally some skim milk was fed. The hogs all took hold, and gained very rapidly. After being put in their respective lots, they were fed their feeds five days before being weighed for the beginning of the experiment. The average of three days weights, Feb. 27-28, and Mar. 1, was taken as the beginning, Feb. 28.
Lots I, II and III made much better gains during the preliminary period, and this accounts for the variation in weight at the beginning of the experiment.

The feeding was done twice a day, morning and evening, and a feed consisted of all they would eat up in from one to three hours after feeding, so that they would have a good appetite for the next feed. The feeding was watched very closely, and the amount raised or lowered as the case demanded. The kafir corn was of the black hull white variety of the crop of '98, and raised on the College farm. The soy beans were of the yellow soy variety, also of the crop of '98, and raised on the College farm. The alfalfa was raised on Wm. Deible's farm below Manhattan, on the Kansas River bottom, and was not first class. It had been cut too ripe, and not perfectly cured. The stems were woody and hard, and there was not a great amount of leaves on the stems. However, they ate it better than would have been expected. The hay was fed in broad, flat troughs on the ground in the pens.

During the entire period, nothing

occured to in any way interfere with the experiment. The weather was very bad several times, and on the whole worse than ordinary for a similar period. The lots all had the same advantages and disadvantages, so the weather could not be charged as injuring the experiment from a comparative point of view. However, it undoubtedly lowered the resulting gains per amount of feed eaten. For an instance of this by glancing at the following tables it is seen that during the third week, which was very stormy, there was a drop in the amount of feed eaten, and the gain per amount eaten is also less than in either the week preceding or following.

The following tables show the results obtained from each lot; giving the weight of each hog at the beginning, and close of the experiment; the gain of each hog each week, and total gain per hog, and also per lot; also the feed eaten per week, and total

for the experiment, giving a chance to study individuals and compare them in every respect except in amount of feed eaten by each hog.

Table Showing results of Lot I
Fed whole Kafir and alfalfa Hay.

Lot I	Whole Kafir.	Alfalfa Hay	Weights and Gains. B 1	S 2	S 3	S 4	S 5	B 6	B 7	B 8	B 9	B 10	Total Gain & Weight
Weight at Beginning Feb. 28.			165	156	123	154	135	137	139	137	123	147	1416
Weekly Gains 1 Week	395	72	12	10	10	3	12	8	6	5	7	8	81
2d "	~~445~~	96	18	10	6	16	5	5	12	10	13	5	103
3d "	427	98	7	5	7	7	8	5	6	7	8	3	57
4th "	492½	110	18	9	11	6	10	12	7	10	9	10	102
5th "	495	138	18	12	8	11	5	9	16	9	13	7	108
6th "	512½	164	11	-1	3	13	15	12	8	12	14	14	101
7 wk "	637½	216	22	15	16	8	11	14	9	14	13	11	132
Total feed eaten + Total wt Apr. 19.	3434½	894	271	216	178	218	201	202	203	204	200	208	2181
Total gain.			106	60	55	64	66	65	64	67	77	61	685

Table showing result of Lot II, Fed Ground Kaffir corn and Alfalfa Hay.

Lot II	Feed eaten.		Weights and Gains.										
	Kafir meal	alfalfa hay	B 11	D 12	S 13	S 14	B 15	B ~~17~~	S ~~18~~	S ~~20~~	S ~~20~~ 37	B ~~20~~ 31	total gain Lot.
Weight at beginning Feb. 28.			142	153	150	120	179	125	129	138	139	124	1399
Weekly Gain.													
1st Week	410	72	6	15	7	6	12	10	11	9	0	10	86
2d "	475	96	13	4	13	9	11	10	1	6	10	10	87
3d "	440	98	11	10	2	7	11	9	7	5	7	6	75
4th "	492.5	110	13	13	13	8	12	14	5	9	5	9	101
5th "	537.5	138	12	7	12	9	14	16	8	14	10	12	114
6th "	512.5	140	13	14	2	12	11	13	8	10	7	12	102
7th " (8 da)	667.5	192	11	15	18	14	18	15	2	11	9	8	121
Total Feed eaten and final Wt. Apr. 9th	3535	846	221	231	217	185	268	212	271	202	187	191	2085
Total Gain.			79	78	67	65	89	87	42	64	48	67	684

Table showing results of lot III.
Fed 4/5 Kaffir meal and 1/5 Soy Bean Meal.

Lot III	Feed eaten.		Weights and Gains.										
	Kaffir Meal	Soy Bean Meal.	S 16	B 21	B 22	S 23	S 24	S 25	B 26	B 29	S 29	B 30	Total gain and weight.
Weight at beginning Feb. 28.			154	164	176	148	113	138	139	125	133	136	1426
Weekly Gain.													
1st. Week.	332.8	83.2	12	13	15	16	12	17	9	8	0	12	114
2d. "	384.	96.	19	14	15	6	11	13	5	4	13	10	110
3d. "	378.	94.5	17	16	16	11	7	5	9	11	8	9	109
4th "	426	106.5	11	6	16	16	16	11	13	7	5	9	110
5th "	472	118	12	16	16	13	8	18	12	12	10	16	133
6th "	448	112	20	18	20	5	7	20	13	14	11	11	139
7th " (8 days)	572	143	15	20	13	21	21	20	11	16	4	10	151
Total feed eaten and final Wt. Apr. 19.	3012.8	753.2	260	267	287	236	195	242	211	197	184	213	2292
Total Gain			106	103	111	88	82	104	72	72	57	77	866.

Table Showing results obtained from Lot IV, Fed Whole Kafir Corn

Lot IV	Feed	Weights and Gains.										
	Whole Kafir	B 41	B 42	S 43	B 44	S ~~45~~	S 46	B 47	S 48	S 49	S 50	Total weight and Gain
Weight at Beginning Feb. 28.		129	154	137	164	138	141	151	145	153	120	1382
Weekly Gain												
1st Week.	340	3	5	1	6	5	7	15	10	5	5	57
2d "	427½	3	13	6	3	5	9	9	4	-3	7	55
3d "	367½	0	9	0	7	4	4	7	9	5	5	50
4th "	455	3	15	6	10	6	8	15	12	5	6	86
5th "	412½	2	14	7	5	7	9	15	9	-4	1	60
6th "	452½	3	15	5	11	5	12	15	13	8	8	85
7th " (8 da)	455	3	13	2	7	4	4	12	18	2	6	63
Total feed eaten and final wt Apr 19.	2910	146	238	154	163	174	194	229	214	171	155	1838
Total Gain.		17	84	17	49	36	53	78	69	18	35	456

Table showing results of Lot V. Fed Kafir meal.

Lot V	Feed	Weights & Gains.										
	Kafir meal	B 31	S 32	B 33	S 34	B 35	S 36	B 37	S 38	B 39	S 40	Total weight gain.
Weight at Beginning Feb. 28		141	152	146	141	132	160	133	146	118	119	1388
Weekly Gain												
1st Week	335	4	10	2	7	5	5	7	7	3	5	55
2d "	440	5	6	5	6	6	13	3	7	3	8	62
3d "	375	2	2	6	3	4	3	6	6	5	0	37
4th "	402.5	4	10	4	5	8	3	6	14	3	5	62
5th "	422½	7	12	9	6	9	12	11	7	5	8	86
6th "	445	7	4	6	-2	12	15	7	8	7	0	64
7th (8 da)	457½	7	13	9	6	8	4	8	16	3	7	75
Total feed eaten and final wt. Apr. 19.	2872½	177	209	187	172	184	215	181	205	141	162	1829
Total gain.		36	57	41	31	52	55	48	64	24	33	441

An interesting point to be gathered from the tables is the comparison of the gains of individuals in the various lots. It shows how unreliable an experiment of only two or three hogs might be. It also shows that the first three lots fattened much more evenly than the last two. With the exception of number 3 in lot I, which was a short chunk, and number 18 in lot II, a long slim, there was no appreciable difference in the fattening of lots I, II and III. While in lot IV there was a very marked difference; only four of the ten making creditable gains. Lot V was more even than IV, and both lots appeared worse when looking at them in the pens than they do in the tables.

At the close of the experiment, April 18, the five lots were shipped to St Joseph, Mo. The car was partitioned off, and the lots kept separate, each lot being sold on its own merits. Swift and Company bought the hogs,

May 26, and Horace Wood, buyer, made the following comments on the lots.

Lot I, second best, show good finish, worth $3.67, today's market.

Lot II, second best, show good finish, worth $3.67 today's market.

Lot III, Best lot, Better fattened and finished: worth $3.70 to days market.

Lot IV, Third grade, do not show good finish, worth $3.65 to days market.

Lot V, Fourth grade, do not show good quality either in fat or bacon finish.

The hogs were slaughtered, examined by the packers, and the following report made:

Lot I - 10 hogs fed on alfalfa hay and whole Kaffir corn, live weight 2060#. This lot dressed 79½% from live weight, and when cut out, 48 hours after being killed, showed that they were good, firm fleshed hogs, suitable for light weight products. There was a good distribution of lean and fat in the bellies of these hogs, tho for firmness the meat was equal to either lot

II or lot V.

Lot II – 10 hogs fed on Alfalfa hay and Kaffir corn meal, live weight 2060#. This lot dressed 79% from live weight, and the class of product from this lot is practically the same as from lot I; distribution of lean and fat being good. The firmness of the fat in this lot was far above any of the others, and the fat had a good white color that is not customary in corn fed hogs.

Lot III – 10 hogs fed on 4/5 Kaffir corn meal, 1/5 soy bean meal; live weight 2260#. This lot dressed 80% from live weight, and the firmness of the fat in this lot is fair, but the cuts contained rather too great a proportion of fat for this weight hog, and for leanness would not compare with either lot I or lot II. Lot No. 3 could not in any sense be termed a bacon hog.

Lot IV – 10 hogs fed on whole Kaffir corn, live weight 1800#. This lot dressed 80.4% from live weight, and while the

variations in weight were greater in this lot than in any of the others, it was the most suitable lot for bacon hogs of the five. There were a few hogs out of the ten that would have been suitable for English cuts, on account of the evenness of the fat and good distribution of lean through the bellies.

Lot V — 10 hogs fed on Kaffir corn meal, live weight 1790#. This lot dressed 80% from live weight, and while the same average weight as lot No. 4, the hogs were fatter and not so adaptable for fancy bacon, as lot No. 4. Firmness of the fat in this lot was good, but not as good as lot No. 2, but better than any of the others.

In our estimation, lots 1 2 3 and 4 for firmness of the flesh were not better than regular corn fed hogs, tho it seems to us that corn fed hogs of this weight would have been fatter. This excepts lot 3, which as near as we could judge were about as fat as corn fed hogs of that weight

Table VI

Summary of the five lots fed from February 28, to April 19, 1899. Ten hogs in each lot.

Lot and Feed.	Weights				Gain			Grain fed.			
	Lot at beginning of the expr.	Lot at close of the expr.	Average. Beginning	Close	Gain of lot	Average daily gain per head	Average gain per head	Total pounds	Per day per head	Per pound of gain	Pounds of grain per bus. of grain
I Whole Kaffir and Alfalfa hay	1416	2101	141.6	210.1	685	1.37	68.5	3434.5	6.87	5.01	11.18
II Kafir meal and Alfalfa hay	1399	2085	139.9	208.5	686	1.37	68.6	3535	7.07	5.16	10.85
III ⅘ Kaffir meal ⅕ Soy Bean "	1426	2292	142.6	229.2	866	1.73	86.6	3766	7.53	4.35	13.06
IV Whole Kaffir.	1382	1838	138.2	183.8	456	.91	45.6	2910	5.82	6.40	8.75
V Kaffir Meal.	1388	1829	138.8	182.9	441	.88	44.1	2872.5	5.75	6.53	8.59

Lot and Feed	Alfalfa Fed.				Value of feeds & Hogs sold at $3.30					Sale	
	Total pounds	Per day per head	Per pound of gain	Pounds of grain per ton	Kafir corn per bu	Soy Beans per bu	Alfalfa hay per ton	Kafir when alfalfa is worth $3.00 per ton	Kafir when alfalfa is worth $6.00 per ton.	Sold on Market in St. Joseph per cwt.	Amt. bought at sell in price in St. Joseph.
I	894	1.79	.37	333			$10.99	¢34.7	¢32.5	$3.67	$75.60
II	846	1.69	.40	338			$11.15	¢33.8	¢31.8	$3.67	$75.60
III						$1.05				$3.71	83.60
IV					¢28.87					$3.65	65.70
V					¢28.3					$3.60	64.44

Lot I Fed Whole Kafer and Alfalfa Hay.

Lot II Fed Kafer meal and Alfalfa Hay.

Lot III Fed 4/5 Kafir Meal
and 1/5 Soy Bean Meal

Lot IV Fed Whole Kafirs.

Lot V Fed Kafir meal.

Hams from each of the Lots.

would run.

Lots 2 and 5 had firmer flesh than would be found in a regular run of corn fed hogs, but we would not be prepared to say that the five lots taken together would command any decided advantage over corn fed meat.

The yield of these lots from live weight was good, and on the last two lots was a little better than we would expect from this average hog.

Swift & Company.

Also three average hogs were selected from each lot, and cuts from just back of the shoulders photographed, to show the relative proportion and distribution of lean and fat.

Summary. (Table) VI

Table six is a summary of all five lots, bringing the results together in a form that permits of easy study and comparison.

The conclusions to be drawn from this are many. But perhaps the most obvious is that it pays to feed hogs some other feed, rich in

protein with the kaffir; and that alfalfa and soy beans make remarkable changes when added to the feed of kaffir. This experiment was a duplicate of one which preceded it and the results confirm the former in the minutest detail. The alfalfa hay in the previous experiment was of a much better quality, and the probable gain due to its influence in the feed gave it a value of over $28.00 per ton.

The influence of such feeds as alfalfa and and soy beans is seen in more than one way. They add the elements that are necessary to keep up the vital processes, and these insure the health of the hog, and enable it to assimilate a larger amount of food. The effect on the disposition of the hog is also very marked. The hogs in lots fed alfalfa and soy beans, were much more contented, and seemed to enjoy living. While those fed kaffir alone were restless, and had the appearance of being discouraged. They would

get as far away as they could in the pen when approached, instead of coming up to be scratched, as the other lots would.

The results of such experiments should solve the problem of preparing the young hog for market, and make alfalfa and soy beans the cheapest sources of protein for the Kansas farmer - indispensible factors in future hog raising.

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