EXPERIMENT STATION

OF THE

KANSAS STATE AGRICULTURAL COLLEGE,

MANHATTAN.

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FARM DEPARTMENT.

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STEER-FEEDING EXPERIMENTS.—SERIES VI.

THE experiments hereinafter detailed were planned with a view to ascertain the comparative value of corn and red and white Kaffir-corn for steer-feeding. For this purpose 15 steers were procured and divided into three lots of five steers each, each lot being fed exclusively on one of the above-named grains, together with suitable fodder for roughness.

The steers had been raised within a few miles of Manhattan, though on two different farms. They were purchased in two lots; Nos. 1 to 6, inclusive, were purchased September 23, and Nos. 7 to 15, inclusive, were purchased October 5. They were selected with a view to secure uniformity in age, weight, and quality. In age they were about 2 years 9 months old at the time they were purchased, though a few were somewhat younger. They were three years old during the latter part of the winter and early spring of 1897. All but five had been dehorned. These five, Nos. 1, 3, 4, 5, and 14, were dehorned October 10, and soon recovered. Three of the steers were grade Herefords, namely Nos. 8, 13, and 15; all the rest mere grade Shorthorns.

PRELIMINARY FEEDING.

From their arrival on the farm until October 15, they were pastured in a tame-grass meadow with abundant feed, without grain, but on that date the grain feeding began. The feed consisted of a mixture of equal parts of corn, red Kaffir-corn, and white Kaffir-corn, ground fine. At first, they were fed only four pounds per head daily, but this quantity was gradually increased until they reached 16 pounds per day per head. They remained on pasture in the daytime until October 20, from which date they were kept in the yard, in order to accustom them to the quarters they were to occupy before the experiment should begin. By carefully studying their individual characteristics and adjusting the feed to their appetite, we soon arrived at the basis for their division into lots. Along with the grain they had access to what corn-stover they would eat.

BEGINNING OF THE EXPERIMENT.

On November 3 the experiment began by feeding each lot on its particular ration. They were weighed three days in succession, and the average of these weights taken as the weight at the beginning of the experiment. Care was taken to divide the lots as evenly as possible, both as regards weight and feeding quality of the steers. One of the grade Herefords was put in each lot, and each lot was placed in a separate yard with an open shed for shelter, the yards being separated from each other only by a wire fence. The weights of the steers at beginning of experiment are shown in table I herewith:

Table I.

Lot I.	No. of steer.	Nov. 2.	Nov. 3.	Nov. 4.	Average.
	3	1038	1027	1020	1028
	7	896	889	920	902
	8	954	960	953	956
	9	1095	1086	1114	1098
	11	1200	1193	1195	1196
Total.....	.....	.....	.....	.....	5180
Average..	.....	.....	.....	.....	1036

Lot II.	No. of steer.	Nov. 2.	Nov. 3.	Nov. 4.	Average.
	1	988	996	1003	996
	2	1035	1021	1032	1029
	4	996	998	995	996
	12	1028	1010	1005	1014
	13	1073	1065	1073	1070
Total.....	....	.....	.....	.....	5105
Average..	.....	.....	...	.....	1021

Lot III.	No. of steer.	Nov. 2.	Nov. 3.	Nov. 4.	Average.
	5	1033	1025	1025	1028
	6	1003	1013	1018	1011
	10	1052	1032	1048	1044
	14	1050	1030	1026	1035
	15	990	997	1030	1006
Total.....	.....	.....	.....	.....	5124
Average..	....	.....	....	....	1025

FEED AND FEEDING.

Lot I was fed on corn-meal, lot II on red Kaffir-corn meal, and lot III on white Kaffir-corn meal, and all were fed equal quantities of these grains. This is a deviation from previous experiments, in that we have heretofore fed each lot all it would eat, instead of limiting it to a particular quantity, but in this instance it was thought that the experiment would afford a better comparison of the feeding value of the three grains if each lot were fed the same quantity, the lots being as nearly equal in all particulars as it was possible to make them. On this plan, any variation in gain may be fairly attributed to the variation in the quality of the feed. When steers are fed on different feeds, and it is found that one lot eats more than another, it is always a question how far the variation in gains may be due to the different amount of feed consumed; but by feeding them the same quantity there is only one other factor that can have a disturbing influence, namely, individuality, and if the individuality is so adjusted in the division that the lots are nearly equal in this respect, any marked variation in gains must be due to the quality of the feed. All lots were started on November 3 with 80 pounds grain daily for each, or 16 pounds per head. It was given them in two feeds, half in the morning and the other half in the evening. They were watched carefully and occasionally the amount was increased a pound or two per day, but it was always found necessary to go back again to about 80 pounds.

For roughness, each lot was fed 100 pounds Kaffir-corn fodder daily. The fodder was grown on the Station farm, and was of good quality. The heads had been cut off when the seed was ripe, and the fodder was well cured. It was of a bright green color, with the aroma of hay, and the steers appeared to relish it. The plan was to feed them enough so that they should have all they would eat in addition to their grain. Of the 100 pounds fed to each lot daily, from one-fifth to one-third usually remained uneaten. This waste was weighed back and deducted from the amount fed, so that the weights given in the tables which follow are the amounts actually consumed. The waste consisted almost wholly of the butt ends of the stalks, and, as they were full of juice, they were heavy, and represented but a small portion of the bulk of the fodder fed.

GRINDING THE GRAIN.

All the grain was ground as fine as it was practicable with our mill, the Duplex No. 3. To give a better idea of the fineness, a portion of each kind was run through several sieves. The following figures show the size of the meshes in these sieves, the per cent. of the total

bulk which was left on each sieve, and the per cent. which passed through. It will be seen that in each case about three-fourths of the meal was fine enough to pass through a sieve the meshes of which were one-twentieth of an inch, while the amount which passed through the sieve with meshes one-thirty-second of an inch varied from 30 to 45 per cent. for the several kinds, the corn-meal having the larger per cent. of very fine material.

Size of Meshes.	Corn-meal.		Red Kaffir-corn meal.		White Kaffir-corn meal.	
	Per cent. left on sieve.	Per cent. passed through.	Per cent. left on sieve.	Per cent. passed through.	Per cent. left on sieve.	Per cent. passed through.
5-64ths of an inch	3.04	96.96	1.22	98.88	1.85	98.15
1-16th of an inch	10.25	89.75	5.68	94.32	9.50	91.50
1-20th of an inch	24.10	75.90	23.32	76.68	25.86	74.14
1-32d of an inch	54.84	45.16	63.50	36.50	69.39	30.61

LOT FED ON CORN-MEAL.

Lot I was fed on corn-meal exclusively from November 3 until April 27; with Kaffir corn-fodder, a little corn-fodder for three weeks, and, at the close of the experiment, some alfalfa hay, for roughness. The experiment covers 175 days. In that time the five steers gained 1,632 pounds, an average gain of 326 pounds per head, which is equal to a daily average gain of 1.86 pounds per head. Table II shows the weekly weight and gain of each steer in the experiment, from beginning to end. The table shows the same fluctuation in the gain from week to week which is characteristic of all live-stock experiments of this nature.

Table III shows, in like manner, the gain of the lot from week to week, but it is of more interest in that it also shows the feed eaten and the cost of that feed, which, taken together with the gains made, indicates the cost of the gain. I would call special attention to the last four columns in the table, which bring out this feature. The cost per pound of gain, it will be noticed, increases steadily with much regularity from the beginning of the experiment until the close. Thus, the average cost per pound of gain during the first week is 1.54 cents; the average cost at the end of the eighth week is 2.54 cents; while at the end of the sixteenth week it is 3.66 cents per pound of gain, and 3.73 cents at the close of the experiment. The increase in the cost is due to the decrease in gain for the feed consumed. The column headed "Average daily gain per head from November 3" shows that the steers made the best gains in the early portion of the experiment and as they ripened up the gain gradually diminished. With corn-meal worth 30 cents per hundred weight and the fodder

Table II. LOT I.

WEEKLY ACCOUNT OF WEIGHT AND GAIN IN POUNDS.

DATE, 1896-'97.	Steer 3.		Steer 7.		Steer 8.		Steer 9.		Steer 11.		Total.		Average.	
	Weight...	Gain.....	Weight...	Gain.....	Weight...	Gain.....	Weight...	Gain.....	Weight...	Gain.....	Weight...	Gain.....	Weight...	Gain.....
November 3....	1028	.....	902	.....	956	.....	1098	.....	1196	.....	5180	.....	1036	....
" 10....	1041	13	938	36	1000	44	1092	—6	1250	54	5321	141	1061	28
" 17....	1075	34	962	24	1004	4	1122	30	1280	30	5443	122	1088	24
" 24....	1096	21	979	17	1026	22	1172	50	1295	15	5568	125	1113	25
December 1....	1120	24	999	20	1050	24	1163	—9	1313	18	5645	77	1129	16
" 8....	1106	—14	988	—11	1074	24	1161	—2	1308	—5	5637	—8	1127	—2
" 15....	1115	9	1000	12	1103	29	1211	50	1328	20	5757	120	1151	24
" 22....	1158	43	1030	30	1132	29	1206	—5	1380	52	5906	149	1181	30
" 29...	1145	—13	1048	18	1154	22	1240	34	1391	11	5978	72	1195	14
January 5....	1127	—18	1030	—18	1115	—39	1221	—19	1375	—16	5868	—110	1173	—22
" 12....	1153	26	1050	20	1147	32	1223	2	1373	—2	5946	78	1189	16
" 19....	1144	—9	1065	15	1175	28	1226	3	1392	19	6092	56	1200	11
" 26....	1176	32	1081	16	1195	20	1255	29	1400	8	6107	105	1221	21
February 2....	1207	31	1085	4	1208	13	1258	3	1395	—5	6153	46	1230	9
" 9....	1197	—10	1108	23	1215	7	1280	22	1405	10	6205	52	1241	11
" 16....	1207	10	1114	6	1208	—7	1277	—3	1421	16	6227	22	1245	4
" 23....	1217	10	1127	13	1207	—1	1273	—4	1428	7	6252	25	1250	5
March..... 2....	1224	7	1133	6	1255	48	1308	35	1442	14	6362	110	1272	22
" 9....	1237	13	1148	15	1255	0	1344	36	1465	23	6449	87	1290	18
" 16 ...	1251	14	1155	7	1265	10	1348	4	1470	5	6489	40	1298	8
" 23 ...	1245	—6	1158	3	1274	9	1323	—25	1494	24	6494	5	1299	1
" 30 ...	1260	15	1190	32	1290	16	1340	17	1503	9	6583	89	1317	18
April..... 6....	1287	27	1180	—10	1299	9	1358	18	1510	7	6634	51	1327	10
" 13....	1276	—11	1201	21	1303	4	1353	—5	1528	18	6661	27	1332	5
" 20....	1276	0	1225	24	1322	19	1364	11	1545	17	6732	71	1346	14
" 27....	1290	14	1253	28	1320	—2	1383	19	1566	21	6812	80	1362	16
Totals.....	.....	262	.....	351	.....	364	.....	285	....	370	....	1632	.....	326
Average daily gain..	..	1.59	. ..	2.00	.	2 08	.....	1.63	.. .	2.11	.....	9.32	.....	1.86

Total gain of lot, 1,632 pounds.
Average daily gain, 9.32 pounds.
Average daily gain per head, 1.86 pounds.

12.5 cents per hundred weight, the average cost of feed per head of this lot was $12.18. They ate 9.97 pounds corn-meal and 5.69 pounds fooder for each pound of gain, which, at the cost of feed given, made the gain cost 3.73 cents per pound. The total cost of the corn, including the grinding, was $48.81, or about 17 cents per bushel. The lot sold for $4.50 per hundred weight, which, at the weight they had on the market, 6,670 pounds, brought $300.15. After deducting all expenses, namely, first cost of the steers, the preliminary feeding, the cost of shipping, commission, etc., and the cost of fodder eaten, there is left $96.38 to pay for the 290 bushels of corn, which brings about 33.2 cents per bushel.

The chief interest of the experiment is, of course, centered in the comparison of results between the several lots; and to bring out the comparative value of these feeds, the following tables should be closely studied.

Table III. LOT I. CORN-MEAL.

WEEKLY ACCOUNT OF FEED EATEN AND COST OF GAIN.

DATE, 1896-97.	GRAIN.			ROUGHNESS.													
	Corn-meal.		Lbs. grain eaten per lb. of gain from Nov. 3.	Kaffir-corn stover.		Corn-stover.		Alfalfa.		Lbs. rough-ness eaten per lb. of gain from Nov. 3.	Lbs. rough-ness eaten for each lb. grain con-sumed from Nov. 3.	Gain of lot from Nov. 3, lbs.	Average daily gain of lot from Nov. 3, lbs.	Average daily gain per head from Nov. 3, lbs.	Cost per lb. of gain from Nov. 3, cts.
	Weight, lbs.	Cost 30 cts. per cwt.		Weight, lbs.	Cost 12½ cts. per cwt.	Weight, lbs.	Cost 12½ cts. per cwt.	Weight, lbs.	Cost 20 cts. per cwt.						
Nov. 3	.....	.....	.....	.....	$0.618	.....	.....	.....	.....	3.50	.94	141	20.14	4.02	1.54
" 10	522	$1.566	3.70	494	.618	.....	.....	.....	.....	3.83	.92	263	18.78	3.75	1.74
" 17	586	1.758	4.21	528	.660	.....	.....	.....	.....	4.17	.91	383	18.47	3.69	1.89
" 24	666	1.998	4.57	597	.746	.....	.....	.....	.....	4.72	.89	465	16.60	3.32	2.17
Dec. 1	682	2.046	5.28	576	.720	.....	.....	.....	.....	5.70	.82	457	13.05	2.61	2.78
" 8	700	2.100	6.90	414	.517	.....	.....	.....	.....	5.15	.77	577	13.73	2.74	2.64
" 15	700	2.100	6.68	366	.458	.....	.....	.....	.....	4.80	.76	726	14.81	2.80	2.47
" 22	690	2.070	6.26	517	.646	.....	.....	.....	.....	4.89	.76	708	14.25	2.85	2.54
" 29	590	1.770	6.43	413	.516	.....	.....	.....	.....	4.89	.76	688	10.02	2.18	3.35
Jan. 5	662	1.986	8.42	647	.809	.....	.....	.....	.....	6.61	.78	766	10.94	2.13	3.32
" 12	684	2.052	8.46	264	.330	.....	.....	.....	.....	6.23	.74	822	10.67	2.13	3.37
" 19	693	2.004	8.69	210	.262	.....	.....	.....	.....	6.11	.70	927	11.03	2.20	3.23
" 26	650	1.950	8.41	264	.330	.....	.....	.....	.....	5.70	.67	973	10.69	2.13	3.31
Feb. 2	635	1.905	8.66	308	.383	.....	.....	.....	.....	5.75	.66	1,025	10.45	2.09	3.37
" 9	600	1.800	8.81	371	.464	.....	.....	.....	.....	5.82	.66	1,047	9.97	1.99	3.52
" 16	656	1.968	9.25	78	.097	.....	$0.289	.....	.....	5.99	.64	1,072	9.57	1.91	3.66
" 23	658	1.974	9.65	.....	.....	231	.365	.....	.....	6.12	.63	1,132	9.63	1.93	3.61
Mar. 2	658	1.974	9.31	.....	.....	292	.369	.....	.....	5.89	.62	1,192	9.63	1.93	3.46
" 9	658	1.974	9.19	336	.407	295	.369	.....	.....	5.63	.61	1,269	10.07	2.01	3.53
" 16	658	1.974	9.41	256	.320	.....	.....	.....	.....	5.68	.60	1,309	9.84	1.96	3.69
" 23	658	1.974	9.87	247	.309	.....	.....	.....	.....	5.85	.59	1,314	9.38	1.87	3.62
" 30	658	1.974	9.72	252	.332	.....	.....	.....	.....	5.68	.58	1,403	9.54	1.90	3.66
Apr. 6	658	1.974	9.83	280	.350	.....	.....	20	$0.040	5.69	.57	1,454	9.44	1.88	3.76
" 13	658	1.974	10.09	138	.173	.....	.....	175	.350	5.79	.57	1,481	9.19	1.83	3.75
" 20	658	1.974	10.05	151	.189	.....	.....	210	.420	5.76	.57	1,552	9.23	1.84	3.73
" 27	658	1.974	9.97	139	.174	.....	.....	210	.420	5.69	.57	1,632	9.32	1.86	.....
Totals	16,271	$48.813	.....	7,884	$9.880	818	$1.023	615	$1.230	.....	.....	.....	.....	.....	.....

Grain eaten, 16,271 pounds.
Total food eaten, 25,568 pounds.
Average gain per head, 326.4 pounds.
Average daily gain per head, 1.86 pounds.
Total cost of feed, $50.896.

Grain eaten per pound of gain, 9.97 pounds.
Total food eaten per pound of gain, 15.66 pounds.
Roughness eaten, 9,297 pounds.
Total gain, 175 days, 1,632 pounds.

Average daily gain of lot, 9.32 pounds.
Average cost per pound of gain, 3.73 cents.
Average cost of feed per head, $2.18.
Roughness eaten per pound of gain, 5.69 pounds.

THE LOT FED ON RED KAFFIR-CORN MEAL.

Lot II was fed on red Kaffir-corn meal under exactly the same conditions as described for the previous lot. The weights and gains of this lot are set forth in table IV. The lot made a total gain of 1,497 pounds, or an average of 299 pounds per head, which equals 1.71 pounds daily gain per head. This, it will be noticed, is somewhat less than the gain made by the lot fed on corn-meal.

Table IV. LOT II.

WEEKLY ACCOUNT OF WEIGHT AND GAIN IN POUNDS.

DATE, 1896-'97.	Steer 1.		Steer 2.		Steer 4.		Steer 12.		Steer 13.		Total.		Average.	
	Weight...	Gain.....	Weight...	Gain.....	Weight...	Gain.....	Weight...	Gain.....	Weight...	Gain.....	Weight...	Gain.....	Weight...	Gain.....
November 3 ...	996	.....	1029	.....	996	.....	1014	.....	1070	.....	5105	.....	1021	....
" 10....	1021	25	1072	43	1028	32	1041	27	1109	39	5271	166	1054	33
" 17....	1050	29	1103	31	1043	15	1059	18	1124	15	5379	108	1076	22
" 24....	1085	35	1122	19	1071	28	1069	10	1157	33	5504	125	1101	25
December 1....	1075	—10	1142	20	1085	14	1077	8	1154	—3	5533	29	1107	6
" 8....	1105	30	1121	—21	1090	5	1102	25	1168	14	5586	53	1117	10
" 15....	1116	11	1161	40	1114	24	1115	13	1210	42	5716	130	1143	26
" 22....	1156	40	1198	37	1135	21	1142	27	1223	13	5854	138	1171	28
" 29....	1169	13	1203	5	1129	—6	1155	13	1260	37	5916	62	1183	12
January.. 5....	1146	—23	1163	—40	1117	—12	1146	—9	1225	—35	5797	—119	1159	—24
" 12....	1156	10	1197	34	1129	12	1148	2	1258	33	5888	91	1177	18
" 19....	1168	12	1187	—10	1120	—9	1141	—7	1258	0	5874	—14	1175	—2
" 26....	1172	4	1203	16	1117	—3	1165	24	1260	2	5917	43	1183	8
February. 2....	1206	34	1220	17	1133	16	1190	25	1282	22	6031	114	1206	23
" 9....	1210	4	1244	24	1149	16	1210	20	1293	11	6106	75	1221	15
" 16....	1214	4	1235	—9	1151	2	1198	—12	1294	1	6092	—14	1218	—3
" 23....	1219	5	1238	3	1170	19	1201	3	1331	37	6159	67	1232	14
March.... 2....	1230	11	1243	5	1163	—7	1210	9	1310	—21	6156	—3	1231	—1
" 9....	1266	36	1275	32	1188	25	1234	24	1324	14	6287	131	1257	26
" 16....	1248	—18	1286	11	1195	7	1275	41	1352	28	6356	69	1271	14
" 23....	1270	22	1280	—6	1190	—5	1255	—20	1358	6	6353	—3	1270	—1
" 30....	1281	11	1295	15	1192	2	1257	2	1373	15	6398	45	1279	9
April..... 6....	1303	22	1305	10	1205	13	1273	16	1387	14	6473	75	1294	15
" 13 ...	1298	—5	1324	19	1225	20	1278	5	1380	—7	6505	32	1301	7
" 20....	1326	28	1343	19	1235	10	1309	31	1387	7	6600	95	1320	19
" 27....	1312	—14	1340	—3	1244	9	1299	—10	1407	20	6602	2	1320	0
Totals.....	.....	316	.....	311	.....	248	.....	285	.....	337	.....	1497	.....	299
Average daily gain.....	....	1.80	....	1.78	....	1.42	.....	1.63	.....	1.92	.....	8.55	.....	1.71

Total gain of lot, 1,497 pounds.
Average daily gain, 8.55 pounds.
Average daily gain per head, 1.71 pounds.

Table V gives the details concerning the gain and cost of the gain of lot II, as well as the amount eaten of the several feed stuffs. The last column shows, as in table III, the cost of a pound of gain from week to week throughout the experiment. Here we again observe the gradual increase in cost as the feeding progresses. In the adjoining column is seen the decrease in gain from week to week. The gradation is slightly more irregular than in the case of lot I, *i. e.*, they seem to be subject to a little more fluctuation in gains. It will be seen that this lot gained 1,497 pounds, while lot I gained 1,632

pounds. Here is a difference of 135 pounds in favor of the lot fed on corn-meal, and this in spite of the fact that the two lots ate the same amount of grain and that lot II ate 1,000 pounds more roughness than lot I.

The cost of the Kaffir-corn was the same as that of the corn, 30 cents per hundred weight. Since they gained 135 pounds less than lot I, while the cost of the feed was somewhat less for lot I, it follows that the cost per pound of gain was greater for lot II than for lot I, but the difference is not large, namely 42 cents per 100 pounds. This lot ate 10.86 pounds grain and 6.88 pounds fodder for each pound of gain. This is .89 of a pound of grain and 1.19 pounds fodder for each pound of gain more than was eaten by the lot on corn-meal. This lot weighed 6,490 pounds at the Kansas City stock-yards and sold for $4.50 per hundred weight, thus bringing a total of $292.05. Deducting from this the first cost of steers, cost of fodder, cost of freight, commission, etc., which amounts to a total of $198.26, we have a balance of $93.79 to pay for the Kaffir-corn meal eaten, which, as in the former case, was 290 bushels, which allows 32.3 cents per bushel. There is thus less than 1 cent per bushel difference in the price that the steers paid for the corn and red Kaffir-corn they consumed. This on the whole, is a very excellent showing for the red Kaffir-corn, and fully demonstrates its value as a forage crop.

Table V. LOT II. RED KAFFIR-CORN MEAL.

WEEKLY ACCOUNT OF FEED EATEN AND COST OF GAIN.

DATE, 1896-97.	GRAIN.			ROUGHNESS.															
	Red Kaffir-corn meal.		Lbs. grain eaten per lb. of gain from Nov. 3.	Kaffir-corn stover.		Corn stover.		Alfalfa.		Lbs. rough-ness eaten per lb. of gain from Nov. 3.	Lbs. rough-ness eaten for each lb. grain con-sumed from Nov. 3.	Gain of lot from Nov. 3, lbs.	Ave. daily gain of lot from Nov. 3, lbs.	Ave. daily gain per head from Nov. 3, lbs.	Cost per lb. of gain from Nov. 3, cts.
	Weight, lbs.	Cost 30 cts. per cwt.		Weight, lbs.	Cost 12½ cts. per cwt.	Weight, lbs.	Cost 12½ cts. per cwt.	Weight, lbs.	Cost 20 cts. per cwt.						
Nov. 3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
" 10	522	$1.566	3.14	603	$0.754	.....	.....	.....	.....	3.63	1.15	166	23.71	4.74	1.39
" 17	520	1.758	4.04	537	.671	.....	.....	.....	.....	4.16	1.02	274	19.57	3.91	1.73
" 24	660	1.998	4.44	635	.794	.....	.....	.....	.....	4.44	1.00	389	19.00	3.80	1.83
Dec. 1	682	2.046	5.73	542	.677	.....	.....	.....	.....	5.41	.94	428	15.28	3.05	2.39
" 8	700	2.100	6.56	490	.613	.....	.....	.....	.....	5.83	.88	481	13.74	2.74	2.69
" 15	700	2.100	6.31	406	.507	.....	.....	.....	.....	5.25	.83	611	14.54	2.90	2.55
" 22	690	2.070	6.06	549	.686	.....	.....	.....	.....	5.02	.82	749	15.28	3.05	2.44
" 29	590	1.770	6.33	435	.544	.....	.....	.....	.....	5.17	.81	811	14.48	2.89	2.54
Jan. 5	662	1.986	8.37	632	.790	.....	.....	.....	.....	6.97	.83	692	10.93	2.19	3.33
" 12	684	2.052	8.27	300	.375	.....	.....	.....	.....	6.55	.79	783	11.18	2.23	3.30
" 19	603	2.101	9.29	260	.325	.....	.....	.....	.....	7.00	.75	769	9.93	1.99	3.66
" 26	650	1.950	9.60	323	.404	.....	.....	.....	.....	7.03	.73	812	9.66	1.93	3.76
Feb. 2	635	1.905	9.10	352	.440	.....	.....	.....	.....	6.54	.71	926	10.17	2.03	3.55
" 9	690	1.380	9.02	451	.564	.....	.....	.....	.....	6.50	.72	1001	10.21	2.04	3.52
" 16	656	1.968	9.81	78	.097	199	$0.249	.....	.....	6.88	.70	987	9.40	1.88	3.80
" 23	658	1.974	9.81	.....	.....	319	.399	.....	.....	6.74	.68	1054	9.41	1.88	3.78
Mar. 2	658	1.974	10.47	.....	.....	330	.412	.....	.....	7.07	.67	1051	8.83	1.76	4.02
" 9	658	1.974	9.86	382	.478	.....	.....	.....	.....	6.61	.67	1182	9.33	1.87	3.78
" 16	658	1.974	9.85	333	.416	.....	.....	.....	.....	6.51	.66	1251	9.40	1.88	3.77
" 23	653	1.974	10.40	310	.387	.....	.....	.....	.....	6.78	.65	1218	8.91	1.78	3.96
" 30	653	1.974	10.54	330	.412	.....	.....	.....	.....	6.80	.64	1203	8.79	1.75	4.01
Apr. 6	658	1.974	10.45	325	.406	.....	.....	.....	.....	6.68	.63	1268	8.83	1.77	3.97
" 13	658	1.974	10.68	211	.264	.....	.....	20	$0.040	6.80	.63	1400	8.69	1.73	4.06
" 20	658	1.974	10.44	191	.239	.....	.....	175	.350	6.64	.63	1495	8.89	1.77	3.93
" 27	658	1.974	10.86	162	.203	.....	.....	210	.420	6.88	.63	1497	8.55	1.71	4.15
Totals.	16,271	$48.813	.....	8,837	$11.046	848	$1.060	615	$1.230	.....	.....	.....	.....	.....	.....

Grain eaten, 16,271 pounds.
Total food eaten, 26,571 pounds.
Average gain per head, 290.4 pounds.
Average daily gain per head, 1.71 pounds.
Total cost of feed, $62.149.

Grain eaten per pound of gain, 10.86 pounds.
Total food eaten per pound of gain, 17.74 pounds.
Roughness eaten, 10,300 pounds.
Total gain, 175 days, 1,497 pounds.

Average daily gain of lot, 8.55 pounds.
Average cost per pound of gain, 4.15 cents.
Average cost of feed per head, $12.43.
Roughness eaten per pound of gain, 6.88 pounds.

LOT FED ON WHITE KAFFIR-CORN.

Lot III was fed on the grain of the black-hulled white Kaffir-corn. This variety is very generally called white Kaffir-corn in the press and among farmers, but it should be explained that the plants differ from another variety, also called white Kaffir-corn, in that the hulls on one are black and on the other white. (See Farmers' Bulletin No. 37, U. S. Department of Agriculture, and also bulletin 56 of the Kansas Experiment Station.) The grain of the black-hulled white is white or yellowish white in color, and many of the kernels have a tiny brown speck at the apex. The plant resembles in habit the red Kaffir-corn, except that it does not grow quite so tall, and that the head is shorter and somewhat broader and more open than the red variety. The variety having white hulls, also known as white Kaffir-corn, differs from the black-hulled white Kaffir-corn used in this experiment in that the plant is somewhat feebler, the heads do not shoot clear of the sheath of the upper leaf, and the grain is somewhat more mealy. It also yields less, but the grain is probably of a some-

Table VI. LOT III.

WEEKLY ACCOUNT OF WEIGHT AND GAIN IN POUNDS.

DATE, 1896–'97.	Steer 5.		Steer 6.		Steer 10.		Steer 14.		Steer 15.		Total.		Average.	
	Weight...	Gain.....	Weight...	Gain.....	Weight...	Gain.....	Weight...	Gain.....	Weight...	Gain.....	Weight...	Gain.....	Weight...	Gain.....
November 3....	1028	.....	1011	.....	1044	.....	1035	.....	1006	.....	5124	...	1025	....
" 10....	1055	27	1040	29	1078	34	1078	43	1060	54	5311	187	1062	37
" 17....	1083	28	1072	32	1100	22	1070	—8	1093	33	5418	107	1083	21
" 24....	1121	38	1698	26	1130	30	1130	60	1141	48	5620	202	1124	41
December 1....	1149	28	1102	4	1155	25	1140	10	1134	—7	5680	60	1136	12
" 8....	1138	—11	1128	26	1160	5	1150	10	1151	17	5727	47	1145	9
" 15....	1179	41	1148	20	1167	7	1161	11	1171	20	5826	99	1165	20
" 22 ...	1175	—4	1160	12	1220	53	1184	23	1180	9	5919	93	1184	19
" 29....	1194	19	1180	20	1234	14	1211	27	1207	27	6026	107	1205	21
January.. 5....	1190	—4	1158	—22	1200	—34	1182	—29	1191	—16	5921	—105	1184	—21
" 12 ...	1191	1	1163	5	1213	13	1215	33	1208	17	5990	69	1198	14
" 19....	1197	6	1176	13	1225	12	1217	2	1207	—1	6022	32	1204	6
" 26....	1181	—16	1190	14	1240	15	1241	24	1203	—4	6055	33	1211	7
February 2....	1200	19	1206	16	1256	16	1240	—1	1215	12	6117	62	1223	12
" 9....	1224	24	1221	15	1271	15	1271	31	1222	7	6209	92	1242	19
" 16....	1206	—18	1224	3	1260	—11	1258	—13	1227	5	6175	—34	1235	—7
" 23....	1202	—4	1212	—12	1259	—1	1250	—8	1228	1	6151	—24	1230	—5
March.... 2....	1195	—7	1240	28	1275	16	1265	15	1255	27	6230	79	1246	16
" 9....	1228	33	1275	35	1304	29	1300	35	1270	15	6377	147	1275	29
" 16....	1262	34	1280	5	1323	19	1317	17	1318	48	6500	123	1300	25
" 23....	1252	—10	1282	2	1328	5	1307	—10	1296	—22	6465	—35	1293	—7
" 30....	1255	3	1295	13	1340	12	1324	17	1300	4	6514	49	1303	10
April..... 6....	1278	23	1309	14	1350	10	1330	6	1316	16	6583	69	1317	14
" 13....	1285	7	1302	—7	1357	7	1324	—6	1313	—3	6581	—2	1316	—1
" 20....	1261	—24	1329	27	1352	—5	1338	14	1334	21	6614	33	1323	7
" 27....	1292	31	1331	2	1380	28	1345	7	1339	5	6687	73	1337	14
Totals.....	.....	264	.....	320	.....	336	.....	310	.....	333	.....	1563	.....	312
Average daily gain.....	.....	1.51	.....	1.83	.....	1.92	.....	1.77	....	1.90	....	8.93		1.78

Total gain of lot, 1,563 pounds.
Average daily gain, 8.93 pounds.
Average daily gain per head, 1.78 pounds.

what higher feeding value than the grain of the black-hulled white. I make this explanation to avoid confounding the two, as I believe them to differ somewhat in value. Table VI shows the details of weights and gains of the several steers in lot III from week to week. The five steers in this lot made a total gain of 1,563 pounds, or 312 pounds per head, during the 175 days they were under experiment. The average daily gain per head was 1.78 pounds.

In table VII the details are given concerning the feed eaten, cost of feed, the gain made, and the average cost per pound of gain. As in tables III and V for the other two lots, the last column shows the cost per pound of gain, and in like manner indicates that there is a gradual increase in the cost as the feeding progresses. The increase in cost, and the counterpart thereof, the decrease in gain, is somewhat more regular in this lot than was the case with lot II. The lot gained 1,563 pounds and the gain cost 4.01 cents per pound. The cost of feed was $62.80 and the amount of grain eaten was the same, but this lot ate 528 pounds more fodder than lot II. They were not fed any more than lot II, but they ate it up cleaner. They ate 10.41 pounds grain and 6.92 pounds roughness for each pound of gain made. This lot weighed 6,520 pounds in Kansas City, which, at $4.50 per hundred weight, amounted to $293.40. The cost of the steers, cost of roughness and of shipping amounted to $202.57. This leaves a balance of $90.83 to pay for 290 bushels of Kaffir-corn. This allows 31.3 cents per bushel, which is a cent less than lot II paid for the red Kaffir-corn, and 1.9 cents less than lot I paid for their corn.

Table VII. LOT III. WHITE KAFFIR-CORN MEAL.

WEEKLY ACCOUNT OF FEED EATEN AND COST OF GAIN.

Date, 1896-97.	Grain.			Roughness.										Gain of lot from Nov. 3, lbs.	Av. daily gain of lot from Nov. 3, lbs.	Av. daily gain per head from Nov. 3, lbs.	Cost per lb. of gain from Nov. 3, cts.
	White Kaffir-corn meal.		Lbs. grain eaten per lb. of gain from Nov. 3.	Kaffir-corn stover.		Corn-stover.		Alfalfa.		Lbs. rough-ness eaten per lb. of gain from Nov. 3.	Lbs. rough-ness eaten for each lb. grain con-sumed from Nov. 3.						
	Weight, lbs.	Cost 30 cts. per cwt.		Weight, lbs.	Cost 12½ cts. per cwt.	Weight, lbs.	Cost 12½ cts. per cwt.	Weight, lbs.	Cost 20 cts. per cwt.								
Nov. 3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
" 10	522	$1.566	2.79	628	$0.785	.....	.....	.....	.....	3.35	1.20	.....	.....	187	26.71	5.34	1.25
" 17	538	1.758	3.76	550	.688	.....	.....	.....	.....	4.00	1.06	.....	.....	294	21.00	4.20	1.63
" 24	666	1.998	3.58	644	.805	.....	.....	.....	.....	3.67	1.02	.....	.....	406	23.61	4.72	1.53
Dec. 1	682	2.046	4.41	601	.751	.....	.....	.....	.....	4.35	.98	.....	.....	556	19.85	3.97	1.86
" 8	710	2.100	5.23	498	.623	.....	.....	.....	.....	4.84	.92	.....	.....	603	17.22	3.44	2.17
" 15	700	2.100	5.49	411	.518	.....	.....	.....	.....	4.75	.86	.....	.....	702	16.71	3.31	2.21
" 22	690	2.070	5.71	555	.694	.....	.....	.....	.....	4.89	.85	.....	.....	795	16.22	3.21	2.32
" 29	590	1.770	5.69	502	.627	.....	.....	.....	.....	4.86	.85	.....	.....	902	16.10	3.22	2.31
Jan. 5	682	1.986	7.27	672	.840	.....	.....	.....	.....	6.35	.87	.....	.....	797	12.65	2.53	2.97
" 12	634	2.032	7.48	324	.405	.....	.....	.....	.....	6.22	.83	.....	.....	860	12.37	2.47	3.02
" 19	668	2.001	7.06	342	.342	.....	.....	.....	.....	6.30	.79	.....	.....	898	11.66	2.33	3.17
" 26	650	1.950	8.37	252	.315	.....	.....	.....	.....	6.35	.75	.....	.....	931	11.08	2.21	3.30
Feb. 2	635	1.905	8.19	365	.456	.....	.....	.....	.....	6.32	.74	.....	.....	993	10.91	2.18	3.33
" 9	600	1.800	8.32	434	.542	.....	.....	.....	.....	6.18	.74	.....	.....	1035	11.07	2.21	3.27
" 16	656	1.968	9.22	92	.115	199	$0.249	.....	.....	6.66	.72	.....	.....	1051	10.00	2.00	3.59
" 23	658	1.974	10.07	.....	.....	314	.392	.....	.....	7.12	.70	.....	.....	1027	9.16	1.83	3.91
Mar. 2	658	1.974	9.65	.....	.....	324	.405	.....	.....	6.90	.69	.....	.....	1106	9.29	1.85	3.84
" 9	658	1.974	9.30	.....	.505	.....	.....	.....	.....	6.42	.69	.....	.....	1253	9.04	1.88	3.59
" 16	658	1.974	8.95	404	.483	.....	.....	.....	.....	6.12	.68	.....	.....	1376	10.34	2.06	3.45
" 23	658	1.974	9.08	386	.448	.....	.....	.....	.....	6.55	.67	.....	.....	1341	9.57	1.91	3.72
" 30	658	1.974	8.81	358	.457	.....	.....	.....	.....	6.53	.67	.....	.....	1300	9.45	1.89	3.76
Apr. 6	658	1.974	9.79	349	.436	.....	.....	20	$0.040	6.32	.00	.....	.....	1469	9.47	1.89	3.75
" 13	658	1.974	10 26	279	.324	.....	.....	175	.350	6.83	.66	.....	.....	1457	9.01	1.80	3.94
" 20	658	1.974	10.47	211	.301	.....	.....	210	420	6 98	.66	.....	.....	1440	8 86	1.77	4 03
" 27	658	1 974	10.41	203	.260	.....	.....	210	.420	6.92	.66	.....	.....	1503	8 93	1.78	4.01
Totals	16,271	$18.813	...	9,376	$11.720	837	$1.046	625	$1.230	.....	...	.....	.....	.....	.....	.....	.....

Grain eaten, 16,271 pounds.
Total food eaten, 27,030 pounds.
Average gain per head, 312.6 pounds.
Average daily gain per head, 1.78 pounds.
Total cost of feed, $32.809.

Grain eaten per pound of gain, 10.41 pounds.
Total food eaten per pound of gain, 17.33 pounds.
Roughness eaten, 10,825 pounds.
Total gain, 175 days, 1,563 pounds.

Average daily gain of lot, 8.93 pounds.
Average cost per pound of gain, 4.01 cents.
Average cost of feed per head, $12.56.
Roughness eaten per pound of gain, 6.92 pounds.

KAFFIR-CORN COMPARES WELL WITH CORN.

The fact that these lots show so little difference in their gains and the value received for the grain fed is a gratifying proof of the value of Kaffir-corn. The feeding value of corn has long been known, but this is the first experiment in which Kaffir-corn has been tested so thoroughly and for so long a period under normal conditions. The steers were fair representatives of the grade cattle raised in the central West. They were neither high-bred cattle nor common scrubs. The conditions of the experiment were those that prevail with the average farmer and feeder. They were fed in open lots, where they could seek the shelter of a small shed when desired, but they were not pampered or petted in any way. The results obtained in this case can be obtained by any feeder in the state without providing better quarters or giving more attention to their feed and care than can be and is furnished by the average farmer anywhere.

That both the varieties of Kaffir-corn most popular in the West should have given results which compare so nearly with those of corn under these conditions is a matter of no little interest because of its economic significance. The past half dozen years have developed the fact that Kaffir-corn can be successfully grown in seasons and in places; too dry for corn; that it will grow on poorer soil than corn and that under equally favorable conditions it will outyield corn both in forage and grain has also been proved. When we now can add to this excellent record the further fact that Kaffir-corn is nearly equal to corn as a beef producer, the future of beef production in the West seems to me to be assured. Except in unusually disastrous seasons, when everything fails, it is reasonably safe to count on a good crop of Kaffir-corn. A shortage in the corn crop need not seriously check the procession of fat steers from the pastures and farms of Kansas to the centers of distribution, from whence they go to feed the hungry the world over, and the Kansas farmer and stock-raiser who will give his attention to steers and Kaffir-corn need not dread the hot winds of July, as he is wont to do, because they need no longer rob him of a year's profit, or, at most, do more than slightly diminish his income.

I confess that the results are far more gratifying than I had dared to hope. While I had expected that steers could be fattened on Kaffir-corn, I had not ventured to hope that it would be so nearly equal to corn as the present experiment proves it to be; for while it is true that corn gave slightly the best returns, it should be borne in mind that. the coarse fodder consisted almost wholly of Kaffir-corn on which the grain had matured before the fodder was cut, with the exception of two weeks in which they were fed corn-stover only. During the last three weeks some alfalfa hay of rather inferior quality was added

to all the lots alike, but the Kaffir-corn fodder was only partly withdrawn. The two lots fed Kaffir-corn were thus fattened almost wholly on this plant, while the lot fed on corn-meal had a variety, in that their diet was drawn from two classes of plants, both corn and Kaffir-corn. It is possible that this fact may have had something to do with the slightly better gains of this lot.

It should further be noticed that the mill on which the grain was ground did not do equally good work with both classes of grain. It seemed to be better adapted to the corn than to the Kaffir-corn; at any rate a larger per cent. of the corn-meal went through the finest sieve than was the case with the Kaffir-corn. (See the figures on this subject under the heading of "Grinding the Grain.") And the fact that the corn-meal was somewhat finer apparently made it more available in the processes of digestion. Under the heading of "Amount Digested," it will be seen that a larger percentage of the Kaffir-corn went through the steers undigested than of the corn. This is doubtless due in part to the difference in fineness, and is of itself sufficient reason for the somewhat better gains of the corn-fed steers.

Future experiments which shall approach the subject from different standpoints will doubtless reveal further qualities in this grain of which we are not now aware, and determine upon the best manner of feeding. But the case as it stands proves conclusively that beeves can be fattened on Kaffir-corn, and, taken together with the large yields and drought-resisting qualities of this grain, it ought to be coordinate with corn in the economy of the farm.

PER CENT. OF FEED PASSING THROUGH THE ALIMENTARY CANAL UNDIGESTED.

An effort was made to ascertain how much of the feed passed through the steers undigested. To this end the manure was carefully gathered from each lot for 33 days at the beginning of the experiment The manure which had been collected during each 24 hours was washed by the following method: It was put into a barrel which was supported by the middle so as to be readily given a rocking motion. A stream of water was directed into the mass with constant agitation. This caused the manure particles to rise to the top and float away with the water, while the undigested meal settled to the bottom. Only an insignificant portion of the finest of the meal could be lost by this treatment. The grain which was thus collected was weighed after being drained, then thoroughly dried by artificial heat in the boiler-room, and finally weighed again. The following figures give the weights of grain eaten by the steers during the 33 days, the wet

weight of the grain washed from the manure, the dry weight of the washings, and the amount of undigested grain expressed in per cent.:

Number of Lot.	Grain eaten, lbs.	Wet weight of grain washed from manure.	Dry weight of grain washed from manure.	Per cent. of grain undigested.
I. Corn-meal.....	2,982	392	162.77	5.46
II. Red Kaffir-corn meal	3,008	732	340.36	11.27
III. White Kaffir-corn meal.....	3,008	867	425.09	14.13

These figures show, in the first place, that the steers digested the corn-meal better than they did either of the Kaffir-corns. In this connection it is interesting to note what has been stated under the heading, "Grinding the Grain," namely, that the mill ground the corn finer than the Kaffir-corn. Thus, while 45 per cent. of the corn-meal passed through the finest sieve, only 36.5 per cent. and 30.5 per cent. passed through that sieve of the red and white Kaffir-corn, respectively. While the difference in fineness is not so marked as the differences in the amounts that were not digested, the figures nevertheless suggest that these facts stand in the possible relation of cause and effect. The figures further show that there is a large amount of grain expelled in the manure even when the feed is ground to more than the usual fineness, and if not utilized by having hogs to follow, this waste will represent a money loss, which may make the difference between a profit and a loss on the transaction.

THE VALUE OF DROPPINGS FOR HOG FEED.

To make a practical test of the value of the droppings for hog feed, seven shoats were placed behind each lot of steers December 15, and a record kept of their gain and the amount of feed eaten by them in addition to what they got from the droppings. The aim was to keep the hogs growing normally and at the same time feed them as little grain as possible, so that they should always be urged by a good appetite to pick up the droppings clean. All the hogs were thoroughbred Poland-Chinas of the same breeding and of very nearly the same age. When put in after the steers the several lots averaged the following weights per head: Lot I, 166 pounds; lot II, 168 pounds, and lot III, 169 pounds. These hogs were weighed individually each week throughout the experiment. The following brief table shows in condensed form the number of pounds grain fed to each lot, the number of pounds of feed that was available in the manure, estimated on the basis of the amount washed out, the number of pounds of

pork made by each lot, and the number of pounds feed estimated to have been consumed for each pound of gain:

ITEM.	Lot I.	Lot II.	Lot III
Pounds grain eaten	2,520	2,520	2,489
Pounds feed available in manure	705	1,475	1,842
Gain of each lot	635	693	725
Pounds feed available per pound of gain	5.07	5.72	5.96

It will be seen at a glance that while the hogs following the three lots of steers were fed practically the same amount of grain, the gains vary with the amount of feed that they found in the manure. Former experiments have proven that Kaffir-corn did not produce as good gains in hogs as corn did. It is therefore to be expected that lots II and III, which were fed red and white Kaffir-corn respectively, like the steers they followed, would require more feed to make a pound of gain than the corn-fed hogs. This, it mill be seen, is the case. Lot II, which found 11.27 per cent. of the grain fed to the steers in the manure, gained 63 pounds more than lot I, which found only 5.46 per cent.; and lot III, which found 14.13 per cent. of the feed fed to the steers in the manure, gained 27 pounds more than lot II. These figures appear to the writer to prove that the undigested grain voided by steers can be practically all utilized in the production of pork.

A comparison of the amount of feed available for the hogs for each pound of gain made is likewise interesting. It is, of course, not to be expected that the hogs should gather up all the feed contained in the manure but the figures show that the waste has at best been but small. If we suppose that lot I had found no feed in the droppings and still made the same gain, it would have required 3.96 pounds corn-meal for each pound of gain. Under the conditions of the experiment, it is scarcely possible they could have made a pound of gain from that amount of feed; but they found, in addition, feed in the manure which equaled 1.11 pounds for each pound of gain made. This makes a total of 5.07 pounds of grain for each pound of gain, which, under the conditions, is a reasonably good gain for that. amount of feed. In like manner, the amount of red and white Kaffir-corn fed to lots II and III amounted to 3.61 and 3.42 pounds of grain for each pound of gain, respectively, amounts which are wholly inadequate to produce that amount of growth; but lot II found 2.11 pounds feed in the manure for each pound of gain, and lot III 2.54 pounds feed for each pound of gain, which made totals of 5.72 and 5.96 pounds feed, respectively, for each pound of gain, which, under the circumstances, is a reasonable gain on that amount of feed.

To state the matter briefly, the experiment proves that hogs can utilize kaffir-corn feed in the manure and bring out the value in pork in about the same ratio of values that exists between corn and Kaffir-corn.

MEAN DAILY TEMPERATURE IN YARD DURING EXPERIMENT.

The winter was, on the whole, very favorable to outdoor feeding. There were only few storms, and these not severe, and the temperature at no time fell very low. Table VIII shows the mean daily temperature in the yard during the whole experiment.

Table VIII.

MEAN DAILY TEMPERATURE IN YARD.

DATE, 1896.	Mean temperature in yard.	DATE, 1896-'97.	Mean temperature in yard.	DATE, 1897.	Mean temperature in yard.	DATE, 1897.	Mean temperature in yard.	DATE, 1897.	Mean temperature in yard.
Nov. 4	40⅗	Dec. 9	48⅘	Jan. 13	39⅛	Feb. 17	41⅛	Mar. 24	43⅛
5	49⅛	10	50⅘	14	30⅘	18	42⅛	25	48⅘
6	42	11	52⅛	15	37⅛	19	38⅛	26	54⅖
7	33⅗	12	43⅓	16	49⅗	20	51⅗	27	49⅓
8	30⅛	13	45	17	35	21	41⅛	28	61⅛
9	51⅛	14	35⅛	18	41⅗	22	37⅘	29	52⅓
10	39	15	43⅗	19	39⅘	23	40	30	66
11	30⅘	16	47	20	37⅛	24	42⅘	31	56
12	42	17	31⅛	21	37	25	32⅘	April 1	53
13	50⅛	18	27⅛	22	38⅛	26	16⅘	2	58⅘
14	55	19	38⅗	23	36⅘	27	31	3	52
15	62	20	33⅛	24	5⅘	28	39⅘	4	53⅛
16	63⅗	21	43⅛	25	7⅘	Mar. 1	34	5	54⅛
17	57⅗	22	48⅛	26	10	2	26⅛	6	49⅛
18	36⅛	23	30⅛	27	13	3	38⅘	7	47⅗
19	26⅗	24	29⅗	28	11⅛	4	41⅛	8	50
20	32⅛	25	34	29	22⅘	5	44⅘	9	49
21	29⅛	26	37⅘	30	31	6	34	10	53
22	29⅛	27	43	31	37⅘	7	48	11	55
23	52⅛	28	51	Feb. 1	36⅗	8	57⅛	12	50⅘
24	46⅗	29	54⅛	2	34	9	46⅘	13	50
25	67⅛	30	57	3	34⅛	10	52⅘	14	57⅛
26	36⅗	31	50	4	34⅛	11	50⅛	15	58
27	15⅛	Jan. 1	51⅛	5	33⅛	12	30⅛	16	56
28	14⅛	2	25	6	34⅘	13	22⅘	17	62⅘
29	23	3	15⅛	7	33⅗	14	28⅗	18	71⅘
30	21⅛	4	19⅘	8	31	15	45⅛	19	51⅛
Dec. 1	34⅗	5	22	9	36⅛	16	47⅘	20	58⅗
2	33⅛	6	33	10	29⅗	17	61	21	75
3	35⅗	7	41⅘	11	31⅛	18	65⅘	22	70⅛
4	45⅗	8	46	12	38	19	59	23	75
5	53	9	43⅘	13	36⅛	20	51⅛	24	70
6	46	10	39⅛	14	36	21	45⅗	25	71
7	37	11	41	15	33⅗	22	40	26	76
8	46	12	36⅛	16	41⅛	23	37⅗	27	69⅛

FINANCIAL DATA.

The statements concerning each lot given herewith show the details of expenditure as well as the proceeds from the sale of the steers. It will be seen that each lot made a profit, lot I of $47.60; lot II, of $44.98 ; and lot III, of $42.02.

Lot I—Dr.

To 5 steers, first cost, 4,916 pounds @ $3.52 per cwt		$173.04
To preliminary feeding:		
Pasture	$1.16	
403.33 pounds corn-meal @ at 30 cents per cwt	1.21	
403.33 pounds red Kaffir-corn meal @ 30 cents per cwt	1.21	
403.33 pounds white Kaffir-corn meal @ 30 cents per cwt	1.21	
550.00 pounds corn-stover @ 12½ cents per cwt	.69	
750.00 pounds prairie hay @ 15 cents per cwt	1.12	
		6.60
To feed during experiment:		
16,271 pounds corn-meal @ 30 cents per cwt	$48.81	
7,864 pounds Kaffir-corn stover @ 12½ cents per cwt	9.83	
818 pounds corn-stover @ 12½ cents per cwt	1.02	
615 pounds alfalfa @ 20 cents per cwt	1.23	
		60.89
To preparation for shipping:		
101 pounds corn-meal @ 30 cents per cwt	$0.30	
19 pounds oats @ 78 cents per cwt	.15	
58 pounds Kaffir-corn stover @ 12½ cents per cwt	.07	
20 pounds alfalfa @ 20 cents per cwt	.04	
42 pounds orchard-grass @ 15 cents per cwt	.06	
		.62
To freight and expense of sale		11.40
Total		$252.55

Cr.

By 5 steers, 6,670 pounds @ $4.50 per cwt	300.15
Balance	$47.60

Lot II—Dr.

To 5 steers, first cost, 4,720 pounds @ $3.52 per cwt		$166.14
To preliminary feeding:		
Pasture	$1.16	
412.67 pounds corn-meal @ 30 cents per cwt	1.24	
412.67 pounds red Kaffir-corn meal @ 30 cents per cwt	1.24	
412.67 pounds white Kaffir-corn meal @ 30 cents per cwt	1.24	
550.00 pounds corn-stover @ 12½ cents per cwt	.69	
870.00 pounds prairie hay @ 15 cents per cwt	1.30	
		6.87
To feed during experiment:		
16,271 pounds red Kaffir-corn meal @ 30 cents per cwt	$48.81	
8,837 pounds Kaffir-corn stover @ 12½ cents per cwt	11.05	
848 pounds corn-stover @ 12½ cents per cwt	1.06	
615 pounds alfalfa @ 20 cents per cwt	1.23	
		62.15
To preparation for shipping:		
118 pounds corn-meal @ 30 cents per cwt	$0.35	
25 pounds oats @ 78 cents per cwt	.19	
69 pounds Kaffir-corn stover @ 12½ cents per cwt	.08	
20 pounds alfalfa @ 20 cents per cwt	.04	
46 pounds orchard-grass @ 15 cents per cwt	.07	
		.73
To freight and expense of sale		11.18
Total		$247.07

Cr.

By 5 steers, 6,490 pounds @ $4.50 per cwt	292.05
Balance	$44.98

Lot III-Dr.

To 5 steers, first cost, 4,830 pounds @ $3.52 per cwt.		$170.01
To preliminary feeding:		
Pasture	$1.16	
408.67 pounds corn-meal @ 30 cents per cwt.	1.23	
408.67 pounds red Kaffir-corn meal @ 30 cents per cwt.	1.23	
408.67 pounds white Kaffir-corn meal @ 30 cents per cwt.	1.23	
550.00 pounds corn-stover @ 12½ cents per cwt.	.69	
716.00 pounds prairie hay @ 15 cents per cwt.	1.07	
		6.61
To feed during experiment:		
16,271 pounds white Kaffir-corn meal @ 30 cents per cwt.	$48.81	
9,376 pounds Kaffir-corn stover @ 12½ cents per cwt.	11.72	
837 pounds corn-stover @ 12½ cents per cwt.	1.05	
615 pounds alfalfa @ 20 cents per cwt.	1.23	
		62.81
To preparation for shipping:		
118 pounds corn-meal @ 30 cents per cwt.	$0.35	
25 pounds oats @ 78 cents per cwt.	.19	
65 pounds Kaffir-corn stover @ 12½ cents per cwt.	.08	
20 pounds alfalfa @ 20 cents per cwt.	.04	
45 pounds orchard-grass @ 15 cents per cwt.	.07	
		.73
To freight and expense of sale		11.22
Total		$251.38
Cr.		
By 5 steers, 6,520 pounds @ $4.50 per cwt.		293.40
Balance		$42.02

The hogs were not all sold, and it is therefore not possible to credit them with the value produced. Hence no statement is made as regards the profit-and-loss account of the hogs; but on the basis of the gains made by them, the price realized for those sold ($3.70 per cwt.) and the shrinkage in transit, the account would stand as follows: Lot I made a profit of $7.10; lot II, 10.12; and lot III, $11.21. These amounts, added to the profit of the steers, in lot I would be $54.70; lot II, $55.10; and lot III, $53.23, which practically places the Kaffir-corn on the same basis as the corn in regard to feeding value.

RESULTS.

The results of this experiment are of too great practical value to the farmer and breeder of Kansas and adjoining states to be briefly stated. To prepare a summary which should set forth the results fully and clearly, it would be necessary to repeat the greater portion of what has been stated in the foregoing pages, in which the matter has been condensed as much as possible. The reader who is interested in the subject is therefore urged to study this bulletin and note the facts as herein presented, showing the value of Kaffir-corn as compared with corn.