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ONE YEAR WITH A HERD OF HOLSTEIN COWS

C. P. REED.

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The purpose of this work was to show what results can be reasonably expected from a herd of good Holstein cows under ordinary farm management. The herd consisted of fourteen cows at the beginning of the year. One cow was sold in the sixth month, or nearly the middle of her lactation period. All but one cow were bred for fall freshening, and for this reason the 1st of October, 1908, was selected for the beginning of the test and September 31st, 1909, for the end.

The plan of operation was to weigh, at frequent intervals, the fodder and grain fed each cow and record the weights. The average of these separate weighings was to be accepted as approximately the correct weight of each day's ration. A record was also kept of the total grain and fodder on hand at the beginning and ending of the feeding period, and also what was purchased. This was done to act as a check on amounts fed. We adopted no hard and fast rules as to amounts to be fed, but rather attempted to feed what each cow could consume to an advantage, increasing or diminishing the amount as the cow seemed to respond in milk yield, her general health and vigor being watched meanwhile. At each milking the milk was weighed and the weight recorded. Once a month a man was sent from the

College to sample and test each cow's milk under the rules of the Holstein Freisian Association for semi-official yearly records. Promising cows were duly reported to the Supt. of Advanced Register, and their records are authentic, but the others must be considered as private records, although the rules of the Holstein Association were followed quite closely.

Three of these cows had been bred and raised on the place. The remainder had been purchased as calves or yearlings when opportunity offered them at almost grade prices. Selected in this way, not one of them had any A. R. O. Records on the female side of their ancestry. Their general appearance showed no evidence of any superiority over other Holsteins as will be noted from the prices fixed by the appraisers. In fact, all evidence at hand seemed to show that they were below the average. Messrs. H. W. Norton and F. R. Crandall appraised them at the beginning of the year with records unknown, and again at the end of the year with records known. This was done as the cows were all young cows and would be increasing in value as well as giving milk. The herd consisted of four cows 5 years old, three cows 3 years old, on second calf, and seven heifers 2 years old, on first calf. One of the two-year-olds was sold out of the herd at the middle of the year, but the remainder of the herd completed the full year. Two cows had A. R. O. Records previously made and

the others were to be tested during the year.

FEED AND GENERAL CARE.

Oct. 1, to Nov. 1. Cows were allowed the run of the field but as the pasture was dry, they were fed silage at the barn twice daily, about 36#, and ground barley was added after freshening.

Nov. 1, to May 18. Cows were kept at the barn on winter ration described below.

May 18, to June 1. Cows were at pasture and given at the barn as much of the winter ration as they would consume.

June 1, to July 1. No grain or silage was fed at barn except to one cow which had come fresh in May. She was fed on winter grain ration all summer.

July 1, to July 15. Cows were fed 30# silage and 2# cotton seed meal daily.

July 15, to Sept. 1. 35# silage and 2# cotton seed meal was fed daily. Pasture was so short that the cows could get little to eat in the field. Three heifers were showing up better than the others and these were fed 5# of ground barley extra each day all summer.

Sept. 1, to Oct. 1. 3# of bran was fed to the dry cows in place of the cotton seed meal.

This amount of feed kept the cows in good flesh the whole year but it was noted that the handling qualities of the skin were very poor in the first few months of the test,

although visitors invariably commented favorably upon the looks of the herd. In September, previous to the test, and in October and November, the first two months of the test, other farm work was demanding all of our attention and we considered the cows shamefully neglected. At calving time in October and November the cows did not do well and considerable veterinary attention should have been given. The udders were very much caked and inflamed and it is altogether probable that they were not placed on full ration as soon after freshening as they should have been. In December we began to give the cows our first attention and succeeded in getting them into shape for a seven day test by Holiday Time. Six of the two-year-olds were admitted to the Advanced Register. When these reports, with the daily weights since the beginning of lactation period, were submitted to the Supt. of Advanced Register, he wrote at once that something was wrong with our feeding operations that should be remedied. For this reason we fed cotton seed meal and bran towards the close of the test with exceedingly gratifying results in the first few months of the lactation period following the close of this test.

Early in November we adopted a ration for our standard winter ration, this to be varied to each cow as seemed best in the judgment of the feeder, guided by the amount of milk produced and general vigor and relish manifested by the cow

in devouring her feed. This ration consisted of 35# of silage, 9# of clover hay, 5# of shredded corn stalks, 3# of corn and cob meal, 1.5# of oats, 3# of bran and 2# of cotton seed meal. This ration we considered would utilize home grown feedingstuffs to the best advantage. In preparing this ration we loaded a fifty bushel wagon box with corn in the ear and placed on top of this ten bags of oats, about 25 bu., and sent it to mill. When this grist was ground and returned home we mixed it with bran from a bin near by in the proportion of one bag of ground feed to one bushel of bran.

Our daily program was to milk first in the morning, then give a feed of hay. After the men had breakfasted, the cows were watered. While the cows were in the yard, one bushel of silage would be placed in the manger, (a Bidwell type of stall,) one small measure of cotton seed meal and a larger measure of the above mixture with a little salt added. This was thoroughly mixed with the silage before the cows were permitted to return to their stalls. At noon shredded stalks were fed. At four o'clock the cows were again watered and fed silage with grain.

Unfortunately our weights of daily rations do not check up very closely with the total weights of all grists and purchased grains. The latter being weighed in bulk, I have accepted them as the correct ones.

During the winter various other combinations of grain

were tried but nothing else seemed to give as satisfactory results. Usually two cows were selected for the trial and no record kept of the result. While the seven day test was in progress the cows under test were milked four times each twenty-four hours and given what grain they would eat at each milking, less roughage being consumed. The noon and midnight grain was a ready mixed ration, "Union Grain." This was selected for convenience sake. We desired something different than the regular feed for the sake of variety, but now consider it a poor selection, as we have never been able to get any of quite a number of ready mixed rations to give as good results as our own mixtures.

In the latter part of February the oats were dropped out of the ration as they seemed to be very expensive, but the daily milk yield grew less until March 20, when gluten feed was added with a gratifying increase in the milk yield. April 5th we changed our standard grain ration to 4# of corn meal, 3# of cotton seed meal and 3# of gluten feed. This seemed to be a better milk producing ration than the first one, if any allowance can be made for the season of the year and the length of time since freshening.

A comparison of the nutritive ratio of the two rations is of interest.

	Dry Matter	Protein	Carbo-hydrates	Ether Extract	Nutritive Ratio.
1st. Ration	26.262	2.395	12.657	.905	1 : 6.31
2nd. Ration	27.009	3.052	13.424	1.235	1 : 5.36

Total Grain for the Year.

6500# Bran,	at $25.00	per ton,	$81.25
1450# Barley,	" 22.00	" "	15.95
2200# Corn Meal,	" 24.00	" "	26.40
7420# Corn and Cob Meal,	" 20.00	" "	74.20
7500# Cotton Seed Meal,	" 28.00	" "	105.00
2200# Gluten Feed,	" 31.00	" "	34.10
2750# Oats,	" 30.00	" "	41.25
600# Union Grain,	" 31.00	" "	9.30
			$387.45

Total Roughage for the Year.

12 Tons Clover Hay,	at $5.00	per ton	$60.00
76 " Corn Silage,	" 2.50	" "	190.00
7 " Corn Stalks,	" 5.00	" "	35.00
16 Acres Pasture,	" 3.00	" acre	48.00
			$333.00
			387.45
Total Value of Grain and Roughage,			$720.45

The following table gives the name and Herd Book number of each cow, the stall number, the amount of milk given by each cow, the value of that milk computed by the prices paid month by month by the Michigan Condensed Milk Company, the estimated amount of butter fat, and the value of that butter fat as computed month by month by the prices paid by the Durand Creamery Company.

Name.	H. B. No.	Stall No.	Lbs. Milk.	Value.	Lbs. Fat.	Value.
Boutsje Queen 2nd's ButterMaid,	71824	4	10733	$128.42	362.2	$103.98
Corrine DeKol 2d,	71827	6	12193	143.53	430.2	120.75
Gaza Aconeth Pietertje Albino,	71831	3	11603	134.01	374.2	96.28
Houwtje Pietertje Butter Maid,	71835	5	13630	157.47	465.0	145.71
Evalena DeKol Ononis,	85501	13	9032	106.06	251.7	76.13
Ena Butter Boy DeKol,	85502	11	8084	96.12	236.0	69.89
Houwtje Pietertje Ykema Wayne,	89796	2	6641	80.08	219.4	62.75
Mary Ann Ononis DeKol,	88519	9	7692	93.43	248.9	71.33
Jennie Ononis DeKol,	88842	10	8256	101.88	265.2	74.42
Gaza Pietertje Calamity,	89393	7	9208	107.40	295.6	84.64
Gaza Aconeth Calamity, 1/2 yr.	89394	12	3374	44.20	112.5	34.10
Houwtje DeKol Pietertje,	89828	8	10888	126.26	370.8	104.05
Addie DeKol Pietertje,	89830	1	11273	136.06	360.3	103.50
Snowball DeKol Aconeth,	89829	14	8121	99.33	276.0	82.35
			130728	$1554.25	4268.0	$1229.78

These total returns are not actual factory returns because a large amount of milk is used for home consumption; milk

is always subject to loss in handling, and shrinks a trifle in cooling.

For the purpose of comparison of returns from creamery and condensery, allowance must be made for skim milk separated at home. If the separator is adjusted to 25% cream, the above amounts of milk and fat would figure 113250# skim milk. At $.30 per hundred for skim milk, it is worth $339.75. Add this to the value of the fat and there seems to be little choice between creamery and condensery returns for the year. This is 3.3% milk. A richer milk would, of course, favor the creamery returns.

Another consideration enters into the proposition that must be mentioned here. The condensery refuses Sunday milk and some of the holidays. If this milk is utilized to a good advantage it does not affect the comparison, but at many farms it is a serious loss. If this had been hand skimmed by deep setting and churned at home, then placed upon the market as dairy butter, we would have had the following figures.

Factory Returns,	$1309.71
Dairy Butter,	120.80
Skim Milk and Butter Milk,	48.80
	$1479.31

Approximately a loss of $75.00. This was due largely to an extraordinary local condition. The creamery price for butter fat was about one half more than the local market offered for the home made butter. This resulted in a

large demand for cream separators, with a materially diminished supply of dairy butter in the local market toward the end of this test. It is quite probable that never again will there be such a wide margin between first class dairy butter and creamery butter. In this test the milk was separated with cream separator, except a few trial hand skimmings, and cream sold to the creamery. The milk was kept cold and sweet and in the winter fed to calves, and in the summer to pigs. With both creamery and condensery available, we did fairly well, but if compelled to depend upon one or the other, these figures would favor the creamery.

Mr. Crandall and Mr. Norton appraised the herd as follows:

At Beginning of Test.

4 cows five years old,	$680.00
3 cows three years old,	425.00
7 cows two years old,	875.00
	$1980.00

At Close of Test with Records Known.

4 cows six years old,	$800.00
3 cows four years old,	540.00
6 cows three years old,	1070.00
1 cow three years old, previously sold at	135.00
	$2545.00

This makes an increased value in cows of	$565.00
To this may be added, 7 male calves at $5.00 each	35.00
7 heifer calves at $40.00 each,	280.00
Total value of milk at condensery prices,	1554.25
Gross returns for the year,	$2434.25
Deduct cost of feed,	720.45
Net profit for the year,	$1713.80

These figures make no allowance for the labor of caring for the cows and delivering of the milk at the factory, or the expense of regular tests.

The following table shows the cost of the testing:

One seven day test at $2.00 per day for man,	$14.00
Two day tests for eleven months,	44.00
Twelve R.R. fares, E. Lansing to Howell and return,	17.00
Board for man at $.50 per day,	18.00
Sulphuric acid, etc.,	7.00
	$100.00

It is quite common to figure the manure as an offset against the labor of feeding and caring for the cows. In this connection the following table is of interest.

		Nitrogen.	Phosphoric Acid.	Potash.
6500# Bran	contains	173.5#	157.8#	104.6#
1450# Barley	"	22.5	12.0	7.2
2200# Corn Meal	"	40.0	15.4	8.8
7420# Corn and Cob Meal	"	104.3	42.0	34.7

		Nitrogen.	Phosphoric Acid.	Potash.
7500# Cotton Seed Meal	contains	509.2	216.0	65.2
2200# Gluten Feed	"	84.5	9.0	.6
2750# Oats	"	55.6	22.1	16.7
600# Union Grain				
12 Tons Clover Hay	"	496.8	91.2	528.0
76 " Corn Silage	"	425.6	16.7	562.7
7 " Corn Stalks	"	145.6	40.6	196.0
16 Acres Pasture	"	564.0	108.0	620.0
		2621.6	730.8	2144.5

2621.6# of Nitrogen at $.15 per lb.	$393.24
730.8# of Phosphoric Acid at $.07 per lb.	51.15
2144.5# of Potash at $.045 per lb.	96.50
	$540.89

This table shows the fertilizing constituents in the food consumed during the year and its value if purchased in the form of commercial fertilizers. It is hardly safe to estimate that this amount of fertility has been applied to the fields, for at best there is a constant loss of fertility in barnyard manure. The animals retain a small portion of these elements for their growth. One hundred thirty thousand pounds of milk sold off the farm would take away 689# of Nitrogen, 247# of Phosphoric Acid and 234# of Potash, or the equivalent of $125.17 worth of commercial fertilizer.

In this connection it is to be remembered that all the home grown provender has been fed on the farm, together with 6500# bran, 7500# cotton seed meal, and 2200# gluten feed purchased at the feed store. These feedingstuffs represent an addition to the farm fertility of 767.2# Nitrogen, 382.8# Phosphoric Acid and 170.4# Potash, as can be figured from the above table. Comparing these figures with the fertilizer value of the milk sold, we find that we have gained 78.2# Nitrogen, 135.8# Phosphoric Acid and lost 63.6# Potash by our transaction. Figuring this to a dollars and cents basis as above, we find we have bought and added to the farm $19.37 more fertilizer constituents than we have sold off the farm.

The smallness of this last item makes it pertinent that this method of dairy farming will not increase the fertility of the farm without the aid of leguminous crops grown on the farm.

The following table gives the seven day A. R. O. Records of the herd, made during this test or immediately after the close of the test.

Boutsje Queen 2nd's Butter Maid, No. 71824,

Milk, 453.6#, Butter Fat, 14.356#

Gaza Aconeth Pietertje Albino, No. 71831,

Milk, 478.7#, Butter Fat, 14.877#

Houwtje Pietertje Ykema Wayne, No. 89796,

Milk, 381.4#, Butter Fat, 13.016#

Mary Ann Ononis DeKol, No. 88519,

Milk, 302.5#, Butter Fat, 9.25#

Gaza Pietertje Calamity, No. 89393,

Milk, 299.3#, Butter Fat, 8.56#

Gaza Aconeth Calamity, No. 89394,

Milk, 267.2#, Butter Fat, 9.50#

Houwtje DeKol Pietertje, No. 89828,

Milk, 318.5#, Butter Fat, 11.26#

Addie DeKol Pietertje, No. 89830,

Milk, 425.5#, Butter Fat, 13.807#

Snowball DeKol Aconeth, No. 89829,

Milk, 272.5#, Butter Fat, 9.499#.

NOTE. Six months after the close of this test it is evident that another year will not show much increase in the value of the cows. A relatively larger milk yield has been produced, which may enable the herd to show an equal profit for the whole year when completed. The higher price, during the current year, of feedingstuffs as well as of butter fat and milk may affect the profit for the year if a comparison be instituted.