

Experimental study comparing indoor, outdoor rearing of calves

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A study involving a comparison of indoor versus pasture rearing of calves from one to two weeks of age, the use of whole milk versus milk replacer and two levels of starter feeding following weaning was initiated at the Experimental Farm here in May 1961.

A total of 32 Ayrshire bull calves were placed on eight different experimental treatments. Weaning of the calves took place at approximately 130 pounds liveweight, rather than at a specific age.

A summary of the data obtained is presented in the table below.

The average weaning age of all calves was approximately 60 days. Differences in age at weaning were due primarily to differences in birth weights. The average liveweight gains from one week of age to weaning were slightly over one pound per day, and from weaning to 15 weeks of age, 1.3 pounds per day. The weights gains were exceeded as they equalled or exceeded the standard growth

curve of Ayrshire male calves from birth to four months of age.

GAINS IDENTICAL
Gains prior to weaning were nearly identical for calves on either whole milk or a commercial milk replacer. Post-weaning gains were, however, greater on calves weaned from whole milk. Calves reared on pasture from 10 days of age consistently outperformed calves reared indoors, the greatest difference being apparent following weaning. Calves fed whole milk to 130 pounds, in conjunction with pasture rearing, produced the fastest gains in this trial; 1.14 pounds per day during the preweaning period and 1.49 pounds per day from weaning to 15 weeks.

It is somewhat surprising to note that three pounds of starter per day produced gains identical to four pound starter daily during the post-weaning period. It is apparent that the calves compensated for the lower starter intake in part by increasing roughage consumption.

A future trial might be set up to determine the minimum starter which would be compatible with satisfactory gains in conjunction with indoor rearing and varying pasture quality. Several published reports indicate that satisfactory gains can be achieved by young calves on pasture with no supplementary grain feeding.

ATE MORE STARTER
Calves reared on milk replacer ate considerably more starter than those on whole milk, particularly during early life. Gains, however, were not enhanced by this increased starter consumption. Calves on pasture also consumed about one-third less starter than indoor-reared calves.

Of particular significance is the fact that conditions on pasture produced faster gains on less starter than indoor raising. The lowest level of starter was eaten by calves on the whole milk-pasture treatment, coinciding with the fastest rate of gain.

The economical aspects of raising dairy heifers, in particular, is of primary concern to farmers. The cost of raising calves to weaning age and to 15 weeks of age has been calculated, using the following costs per pound of the feedstuffs used: whole milk, three cents; milk replacer, 15 cents; and calf starter, 4.6 cents. The relative costs of hay and pasture have not been considered.

The cost of raising calves on a milk replacer to weaning weight and to 15 weeks was somewhat less than on whole milk, although rate of gain was slightly less on milk replacer-fed calves after weaning. Milk replacer feeding would be even more attractive to dairymen selling whole milk on the fluid market.

Pasture-rearing of calves was considerably cheaper than indoors. The relative costs of hay and pasture would, however, determine the final outcome. Labor requirements also are not included but should be comparable for the two systems in most instances, if not less for pasture rearing.

The following table gives a detailed report on the results of the experiment which included tests of whole milk against milk replacer, indoor against pasture rearing, etc.

Treatment	Age at weaning (days)	Weight gains lbs. per day		Starter consumed lbs. per day for 1 lb. gain		Rearing cost one week		Rearing cost one to 15 weeks				
		Whole milk	Milk replacer	Whole milk	Milk replacer	Whole milk	Milk replacer	Whole milk	Milk replacer			
Liquid diets												
Whole milk	14	57	1.05	1.35	0.60	3.06	0.50	2.33	\$12.82	24.6c	\$19.47	16.7c
Milk replacer	15	63	1.02	1.22	0.95	3.16	0.98	2.64	11.66	20.8	17.72	16.5
Environment												
Indoors	15	61	1.00	1.20	0.92	3.37	0.93	2.85	13.06	24.2	19.66	18.5
Pasture	14	58	1.07	1.36	0.54	2.84	0.66	2.10	11.39	21.1	17.47	14.7
Starter level												
3 lb./day						1.37		2.19				
4 lb./day						1.29		2.81				
Interactions												
Whole milk, indoors	8	58	0.98	1.34	0.72	3.30	0.77	2.70	13.43	27.4	20.34	18.5
pasture	6	55	1.14	1.49	0.44	2.73	0.38	1.33	12.02	22.2	18.34	14.3
Milk replacer, indoors	7	65	1.02	1.17	1.14	3.45	1.12	3.03	12.68	21.5	18.98	18.0
pasture	8	61	1.01	1.26	0.79	2.91	0.86	2.30	10.77	19.9	16.63	15.2

1. Rearing costs do not include cost of hay or pasture.
Estimated cost of feedstuffs: milk three cents per pound; milk replacer, 15 cents per pound; starter, 4.6 cents per pound.

apparent that calves can make more rapid and more efficient gains on pasture from one or two weeks of age, than calves raised indoors. Good quality pasture should be available at all times and the level of internal parasites on the herbage kept to a minimum. A commercial milk replacer has been shown to provide an economical substitute for whole milk where a ready demand of whole milk for human consumption is available, or

where whole milk feeding of calves is not feasible.

TRIAL REPEATED
The entire calf feeding trial will be repeated this year to obtain additional data and attempt to confirm the present results. Future calf trials on rearing and management might include a study of good and poor quality pasture as a result of pasture fertility and management, placing preweaned calves

on pasture at various intervals throughout the summer, the relative value of skim milk feeding for a portion of the pre-weaning period, and various combinations of these and others.

WEANING PRACTICES
A second trial involving Ayrshire heifer and bull calves has been initiated in recent months. The objective of this experiment is to test the hypothesis that weaning according to weight is superior to weaning according to age. Several research workers feel that a bigger calf at birth can be weaned at a younger age than a small calf and thus reduce the initial high cost of raising replacement dairy heifers. Likewise a smaller calf will receive milk or milk substitute for a longer period of time and hence be in a better

position to make efficient gains following weaning. The experimental treatments include whole milk or milk replacer fed to seven weeks of age, 120 pounds liveweight and 100 pounds liveweight, and the effect of each of these treatments on post-weaning performance. No results are available from this project to date.

Liming helps plant growth
Liming helps release phosphorus in acid soils and promotes decomposition of organic matter — both useful to plant growth. Doctors R.L. Halstead and K.

C. Ivanson of the Soil Research Institute of the Canada Department of Agriculture at Ottawa, described laboratory tests with seven acid soils containing as much as 1,500 pounds of phosphorus per acre in organic form. Liming released 10 to 34 pounds of phosphorus per acre, and increased the number of soil micro-organisms that decompose organic matter.

It is reckoned that 50 per cent of the phosphorus in many surface soils in Eastern Canada exists as a part of the soil organic matter. Lime also releases inorganic phosphorus on acid soils. Liming does not eliminate the need for phosphorus application.

ONTARIO

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They saw the Oakridge Holstein herd where George Darrach formerly of Coleman in this province, is farm manager, with two units, one a commercial milk herd kept in loose housing and the other stabled inside.

Mr. Darrach told the visitors the farm had far less udder trouble with the herd in loose housing than with the cattle that are stabled, and the ones fed outside have exceeded the production of those inside, although the thermometer had plunged to 34 below zero at times in winter. They have also had far less trouble at calving time, he added.

About 150 splendid Dual Purpose Shorthorn cattle were seen at the internationally famous Sanford Farm where they saw "four of the finest herd sires in the country and the entire herd qualified in ROP with safe margins." This herd, Mr. Roper exclaimed, has a splendid reputation for turning out good foundation stock. There are many cattle in this province carrying Sanford bloodlines.

R. H. (Dick) Graham, provincial livestock commissioner was the guide for the day when the Ontario department of agriculture was host. The itinerary included a forenoon visit to the Ontario Agricultural College and the Ontario Veterinary College, and a great deal was learned from the visit which included some interesting demonstrations.

A large-scale hog production unit was seen at Allan Cook's Fergus farm where a battery of 175 sows are looked after by K. H. Ferikiden and his wife, and no other person is allowed in the barn, as every attempt is made to keep losses down to a minimum.

The sows produce an average of 10 pigs per litter and perhaps better than two litters per year. All pigs born on this farm are taken at six weeks of age to the feedlot farm at Cookville where they are fed to market weight. Last year his hogs graded better than 63 per cent A's and he hopes to hit 70 per cent this year, he told the visitors.

The biggest private breeder's herd of Herefords in Canada was seen at the farm of George Rodanz at Stouffville, where 450 head are maintained entirely for breeding purposes. Vernon Fraser, head buyer made the trip to Toronto for the Canada Packers' day when the visitors were shown through the firm's big Toronto processing plant, and saw the stock from the pens and followed them through to the processing rooms.

POULTRY PLANT
In the forenoon they had visited the Shur Gain farm at Maple, Ontario where they saw a loose housing setup for a splendid herd of Holstein cattle and one of the biggest experimental poultry plants in the province.

They also saw the artificial breeding unit at Maple. The Scotch Shorthorn herd of M. D. Hogg at Uxbridge and his outstanding \$12,000 imported sire were viewed by the visitors who also stopped for a time at the Waterloo Cattle breeding unit, the largest in Canada, which sends semen to British Columbia and also to the Maritime Provinces. Roy Snyder did the welcoming.

A visit to Swift Canadian plant included a stop at the Union Stockyards where lots of cattle were being auctioned in record time.

Several thousand head can be accommodated in the yards and five auction rings were in operation at the one time. Lots were being sold, from a single animal to a dozen in 40 to 45 seconds by actual timing. One lot of seven steers sold in 47 seconds, Mr. Roper reported. One of Swift's top men, Arthur Mill, a former Kensington, P.E.I. man spent the day with the group and Tom Gillies — flew up from Moncton for the day.

WORK SHOES

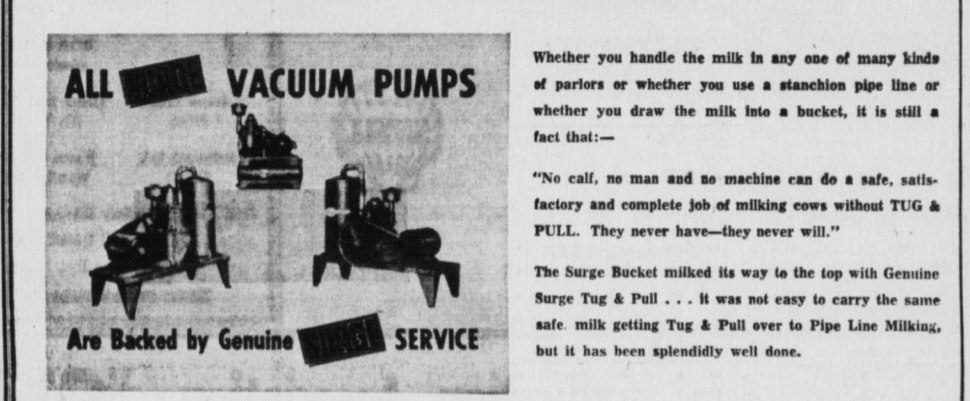
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