

# Early-life management practices and herd longevity, productivity, and profitability

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How well calves perform and are fed and managed does affect their performance as cows (Soberon et al. 2012). How this has changed over the last 5 NAHMS surveys in the United States is shown in Table 1-1 (Kertz 2019), but the last survey was reported in 2014 (NAHMS). More recently, a Canadian survey recorded early-life management practices and their association with dairy herd longevity, productivity, and profitability (Dallago et al., 2025). Since Canada has a milk production quota system, this in general results in smaller herd size. “The average size of the milking herd was 63 lactating cows (median = 55, ranging from a min = 15 to a max = 550, with the 1st quartile at 42 and the 3rd quartile at 70) across the 1,658 dairy herds from which data were analyzed in our paper. We did not assess whether herd size affected any of the results reported in our study (kindly provided by Dr. Gabriel Dalalga).”

“Early-life management practices were retrospectively collected at the farm level using a questionnaire. The questionnaire (Supplemental Material S1, see Notes) comprised 45 questions divided into 4 groups that covered different aspects of management practices: colostrum feeding (11 questions on timing, quantity, quality, type, and method of administration), milk feeding (9 questions on feeding system, type, volume, and frequency), solid feed and weaning (13 questions on age of feed introduction, composition, weaning age, and reasons for weaning and breeding decisions), and housing (12 questions on bedding, group housing strategies, and cleaning practices). Between February 2020 and February 2021, field technicians from Lactanet (Sainte-Anne-de-Bellevue, Québec, Canada), the Canadian DHI agency, conducted the survey over phone calls to 2,087 dairy farms enrolled in the DHI program from Québec, Canada. For each question, farmers were asked to consider the majority of the female calves (75%) rather than exceptions. The answer types were qualitative nominal (e.g., multiple choice), qualitative ordinal (e.g., answers from 1 = less than 50 days to 4 = more than 90 days), or numeric (e.g., liters of milk fed per day).”

**Table 1.** Descriptive statistics of longevity, production, and profitability measures in this study.

<b>Herd outcome</b>	<b>Mean</b>	<b>SD</b>	<b>Median</b>	<b>Minimum</b>	<b>Maximum</b>
<b>LPL<sup>1</sup>, year</b>	3.3	0.76	3.2	1.5	7.9
<b>3+ lactations<sup>2</sup>, %</b>	41.5	8.12	41.4	9.8	75.6
<b>ECM,<sup>3</sup> lb</b>	24,900	3,959	29,887	9,345	43,843
<b>Milk value<sup>4</sup>, Can. \$</b>	7,921.5	1,183.2	7,924.8	1,393.2	15,212.0

<sup>1</sup>Length of productive life.

<sup>2</sup>Herd average percentage of cows on 3<sup>rd</sup> or greater lactations.

<sup>3</sup>Herd average animal lifetime cumulative ECM (energy corrected milk).

<sup>4</sup>Herd average animal lifetime cumulative milk value.

Data shown in **Table 1** indicate:

- The mean and median are similar indicating a more normal distribution of length of productive life (LPL). But there is quite a range, and the SD is about 25% of the mean. However, mean of 3.3 lactations is greater than the US average of about 2.6.
- % of herd with 3 or more lactations follows a similar pattern as LPL. That would be expected with cows lasting more lactations in a herd.
- Average energy-corrected milk (ECM) of nearly 25,000 lb is quite good with a high nearly 45,000 lb.
- Milk value in Canadian dollars followed ECM.

**Table 2.** Top 10 qualitative management practices by traditionalist dairy farms (n = 600).

	<b>Overall<sup>1</sup></b>	<b>Y-test<sup>2</sup></b>	<b>Cla/Mod<sup>3</sup></b>	<b>Mod/Cla<sup>4</sup></b>	<b>P<sup>5</sup> &lt;</b>
<b>Non-pasteurized and non-acidified milk</b>	34.1	+Inf	100.0	94.2	0.001
<b>Whole milk</b>	33.6	+Inf	100.0	7.2	0.001
<b>Waste milk</b>	2.6	9.2	100.0	7.2	0.001
<b>Individual feeding bucket without teat</b>	24.1	8.2	53.6	35.7	0.001
<b>Weaned tied up individually</b>	22.0	5.8	49.2	29.8	0.001
<b>Milk pasteurized and non-acidified</b>	1.3	5.6	95.2	3.3	0.001
<b>Weaned individual stall</b>	18.9	5.3	49.4	25.8	0.001
<b>No colostrum IgG assessed</b>	68.8	5.1	40.2	76.5	0.001
<b>Colostrum fed via bucket without teat</b>	9.0	4.9	55.0	13.7	0.001
<b>Colostrum fed fresh from cow non-pasteurized</b>	92.5	4.9	37.7	96.5	0.001

<sup>1</sup>Proportion of farms adopting each one of the listed early-life management practices on all 1658 farms,

<sup>2</sup>“+Inf” indicates the computed test statistic exceeded the finite numerical limits, reflecting an extremely strong association,

<sup>3</sup>Proportion of farms adopting each one of the listed early-life management practices in cluster 1 out of the overall number of farms that adopt the same practice (e.g., overall, 34.1% of the farms [n = 565] feed calves with non-pasteurized milk, and 100% of them are in cluster 1). Cla = class. Mod = modality.

<sup>4</sup>Proportion of farms in Cluster 1 adopting each one of the listed early-life management practices out of the number of farms in cluster 1 (e.g., overall 94.2% of the farms feed calves non-pasteurized non-acidified milk (e.g., 94.2% out of 600 farms in cluster 1 feed calves non-pasteurized non-acidified milk). Cla = class. Mod = modality.

<sup>5</sup>Overall versus cluster ( $\alpha < 0.05$ ).

**Table 2** indicates:

- Only about one-third of all farms fed non-pasteurized nonacidified milk, but 94% of these 600 traditionalist farms did that.
- Only about one-third of all farms fed whole milk while only 7% of these farms did
- Less than 3% of all farms fed waste milk, while about 7% of these farms did.
- About 40% of all farms tie or individually stall calves after weaning, but about 60% in this cluster did.
- About 70 to 77% of farms did not assess colostrum quality via IgG assessment, and about 95% feed colostrum fresh non-pasteurized colostrum from their dam.

**Table 3.** Top 10 qualitative management practices by modernly managed farms in cluster 2 (n = 1,058).

	Overall <sup>1</sup>	Y-test <sup>2</sup>	Cla/Mod <sup>3</sup>	Mod/Cla <sup>4</sup>	P <sup>5</sup> <
<b>Non-medicated powdered milk replacer</b>	59.2	+Inf	100.0	92.7	0.001
<b>Non-acidified milk</b>	49.6	34.2	100.0	77.8	0.001
<b>Partially acidified milk</b>	7.5	10.6	100.0	11.8	0.001
<b>Automatic milk feeding</b>	11.3	10.3	94.1	16.7	0.001
<b>Acidified milk</b>	4.8	8.3	100.0	7.6	0.001
<b>Medicated powdered milk replacer</b>	4.6	8.2	100.0	7.3	0.001
<b>Non-weaned group housing</b>	38.1	7.7	75.3	44.9	0.001
<b>Non-weaned pen housing</b>	36.9	7.1	74.7	43.2	0.001
<b>Weaned group housing</b>	66.0	5.5	68.5	70.8	0.001
<b>Free fed milk feeding system</b>	4.4	5.3	90.4	6.2	0.001

<sup>1</sup>Proportion of farms adopting each one of the listed early-life management practices on all 1658 farms,

<sup>2</sup>“+Inf” indicates the computed test statistic exceeded the finite numerical limits, reflecting an extremely strong association,

<sup>3</sup>Proportion of farms adopting each one of the listed early-life management practices in cluster 2 out of the overall number of farms that adopt the same practice (e.g., overall, 59.2% of the farms [n = 981] feed calves with non-medicated powdered milk replacer, and 100% of them are in cluster 2). Cla = class. Mod = modality.

<sup>4</sup>Proportion of farms in Cluster 2 adopting each one of the listed early-life management practices out of the number of farms in cluster 2 (eg., overall 920.05).7 % of the farms feed calves with non-medicated powdered milk replacer. Cla = class. Mod = modality.

<sup>5</sup>Overall versus cluster ( $\alpha < 0.05$ ).

**Table 3** indicates:

- About 60% of all farms fed non-medicated powdered milk replacers compared to over 90% of farms in cluster 2.
- The second category was about 50% of all farms fed non-acidified milk while about 78% of farms in cluster 2 did.
- Other categories of milk or MR feeding were much less. But like found in the NAHMS studies, many farms feed combinations of milk and MR.
- Preweaned housing was similar for group and individual pen overall and for cluster 2; and for weaned calves overall and for cluster 2 also.
- Automated feeding systems were low for overall and for cluster 2.

There are extensive data on other factors such as colostrum ~7 days—why wait this long?\_ , when starter is first fed (~ 9 days), and when water is first fed (~ 7 days—why wait this long?).

**Table 4.** Descriptive statistics of longevity, production, and profitability measures in this study for cluster 1 vs 2..

Item	Cluster 1 Traditionally managed	Cluster 2 Modernly managed	P <
<b>LPL<sup>1</sup>, year</b>	3.41 ± 0.03	3.25 ± 0.02	0.001
<b>3+ lactations<sup>2</sup>, %</b>	41.5 ± 0.33	41.6 ± 0.25	0.79
<b>ECM,<sup>3</sup> lb</b>	24,442 ± 140	25,170 ± 106	0.001
<b>Milk value<sup>4</sup>, Can. \$</b>	7,769 ± 48.1	7.925 ± 36.7	0.001

<sup>1</sup>Length of productive life.

<sup>2</sup>Herd average percentage of cows on 3<sup>rd</sup> or greater lactations.

<sup>3</sup>Herd average animal lifetime cumulative ECM (energy corrected milk).

<sup>4</sup>Herd average animal lifetime cumulative milk value.

Data in **Table 4** indicated a significant decrease in herd life by 0.16 years, but significant increases in ECM and Canadian dollars for cluster 2 versus 1.

### **The Bottom Line**

Improvements in feeding and management of calves in this study as defined by traditionalist management versus modernly managed resulted in slightly less herd life but greater milk production and cumulative milk return.

### **References**

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