

# Seasonality Effect on Milk and Milk Products in Central America



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## Introduction

Scientific studies on the seasonal production of milk in Central America, although provide valuable findings, are unlikely to deliver sustainable solutions to the region's rapid demand for milk and beef. New research is needed that considers the full ensemble of practices from ranchers under tropical weather on which they rely, that is likely to reveal new and complex patterns and processes not evident when studied separately. In Central America, cattle is fed with grasses and crop residues from the on-farm production, crossbred animals are used to produce milk and beef (Lentes et al., 2010), and in the rainy months there is higher production of milk, than in the dry months (Benitez and Huang, 2011). However, since the diversity of activities that flows from cattle farmers are intertwined, proponents evaluating factors that impact one activity must consider the whole system.

## Objectives

The present study used data from cattle farmers of El Salvador to examine the farm operational form under the tropical seasons in Central America. The specific objectives of the present study were: 1) to estimate the operational form effect on the milk, milk products and beef in the two seasons; and 2) to compare the three inputs, labor, feedstuff and cows, performance between the two seasons.

## Methods

Cattle farms from El Salvador were the research focus of the present study. Questionnaire was used to collect data about cattle farm operation during the dry and the rainy seasons. The interview was conducted in three different periods from 2009 to 2011. Descriptive statistics, mean, standard deviation, and pair t-test, were performed to determine the significant difference of the outputs and inputs used between the two seasons.

## Results

The valid response from the selected population was 93 cattle farmers engaged in milk production and milk processing in El Salvador. Table 1 summarizes the result of the inputs use and outputs produce between the two seasons from cattle farm in El Salvador.

Table 1. Inputs and outputs from cattle farms in El Salvador (n = 89)

Variables	Dry season			Rainy season			t-test	p	n
	Total	Mean	SD	Tot.	Mean	SD			
<b>Inputs</b>									
Farmland (ha)	146.0			1384.0					
Labor (full time equivalent)	94.5	1.1	0.7	68.3	0.76	0.5	6.51***	<.001	
Family labor	47.5	0.7	0.3	36.0	0.5	0.4	3.66***	<.001	
Hired labor	47.0	1.1	0.5	32.3	0.9	0.2	2.97**	.006	
Herd (animal) <sup>a</sup>	1,833.0	20.6	18.6	2,085.0	23.4	23.4	-2.00*	.048	
Lactating cows	709.0	7.9	7.4	774.0	8.7	8.6	-1.31	.190	
<b>Outputs</b>									
Daily milk (L)	3,183.0	35.7	48.5	3,917.5	44.0	53.4	-3.22**	.001	
Daily milk process (L)	2,417.9	50.9	66.3	2,911.0	60.4	68.9	-2.21*	.035	(28)
White cheese (kg/month)	7,477.0	241.2	313.1	7,111.0	148.1	262.4	.609	.546	(28)
Local fresh cheese (kg/month)	2,010.0	251.2	422.9	2,723.0	389.1	662.3	-1.24	.259	(7)
Butter (L/month)	1,098.0	57.7	86.2	930.0	58.1	83.8	-.027	.978	(14)
Cottage cheese (kg/month)	618.0	56.2	80.2	404.0	57.7	100.9	-1.00	.355	(7)

Note: <sup>a</sup> include animals that are older than 1.5 years

## Sustainability as by-product from the operation form of cattle farmers in Central America

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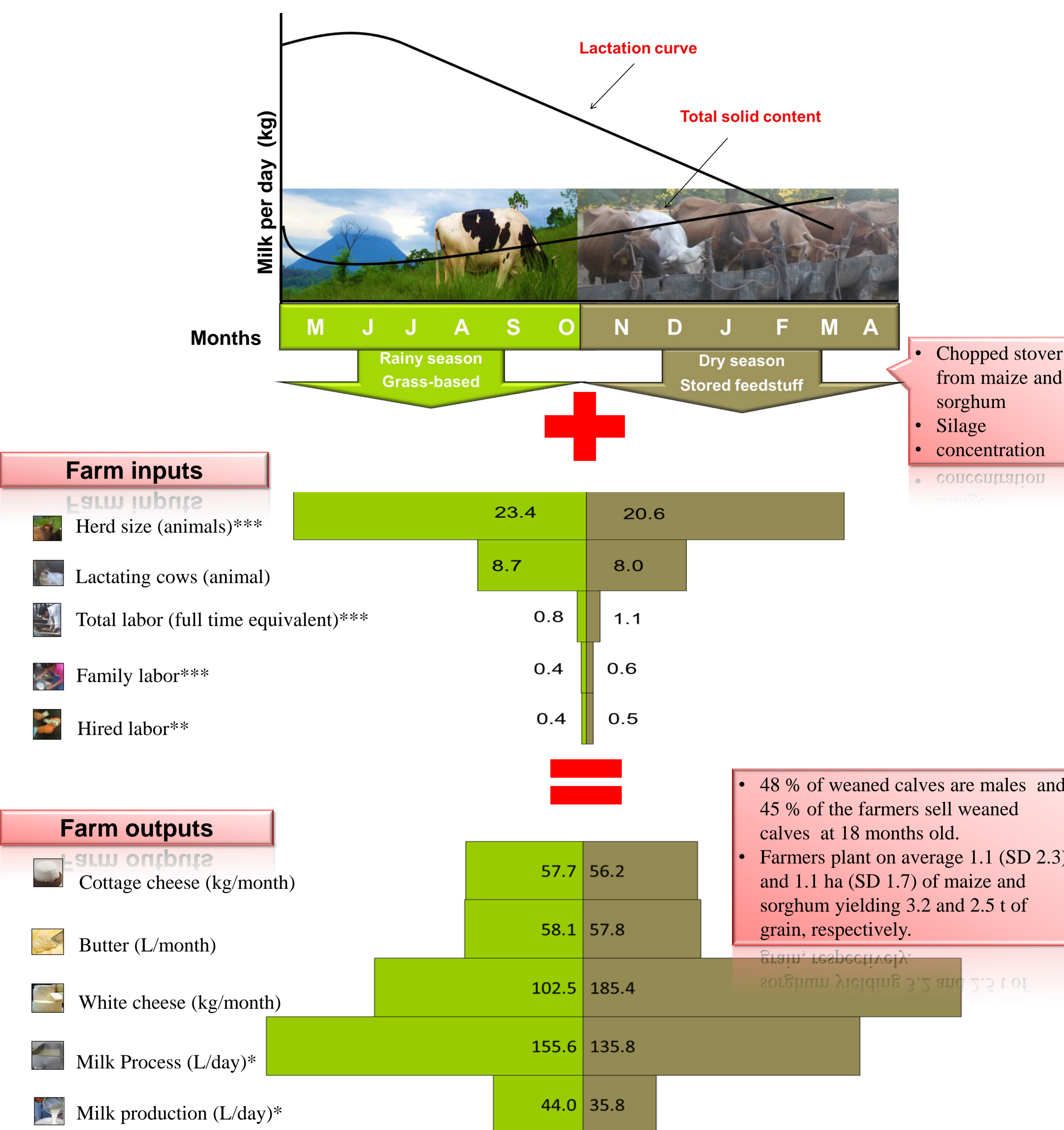


Figure 1. Seasonal pattern of cow's calving in rainy months and the effect on farm inputs and outputs from cattle farmers in Central America. (level of significance: \*10%, \*\* 5%, \*\*\*1%).

## Conclusions

- The study revealed two operation forms, intensive in the dry months and extensive in the rainy months.
- Farmers might have planned cow calving to match the rainy months and have peak milk yield using less labor ( $p < 0.01$ ).
- The quantity of milk produced and milk processed were significantly different between seasons ( $p < 0.1$ ), being higher in the rainy months, but the milk of the dry season yielded a higher quantity of milk products (i.e., white cheese).
- The rainy season feedstuff, grasses, lacked the sufficient amount of fiber and dry matter intake, while the dry season feedstuff, chopped stover and silage was rich in.

## References

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