



INCREASING MILK PRODUCTION USING DORMANT ALFALFA (Medicago sativa L.) IN THE PERUVIAN HIGH PLAIN (PUNO)

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INTRODUCTION

The farmer 4 has the least cost of production with \in 0.13, while farmer 16 has the higher milk cost of production with € 0.28.

TABLE 2: COMPONENTS OF MILK COST OF PRODUCTION



However the management of dairy producers in the Andes and Puno could improve with the support from government agencies.

Puno is the fifth region in milk production in Peru due to some regional promotion of cultivated pastures such as dormant alfalfa and with support of local NGO's. This alfalfa can survive winter and resist the 4 200 ma. s. l. (Agrobanco, 2012). Determination of cost of milk production is essential to improve the dairy operation management (Cunliffe, 2009).

his research aims to describe and characterize the production system with dormant alfalfa W350 in Puno, determining the main components and the milk cost of production.



Nama	District	Direct Costs					mullect costs		
Name		F %	R %	Н%	L M %	L %	I %	E M %	
	Farmer 1, 2, 14, 15, 16, 17	Acora	39.2	1.1	3.4	1.7	50.3	3.8	0.6
	Farmer 3, 4, 5	Atuncolla	39.4	4.3	5.0	0.4	44.8	5.1	1.0
	Farmer 6, 7, 18	Paucarcolla	31.0	2.5	5.7	1.2	63.1	1.1	2.5
	Farmer 8, 9, 10	Taraco	35.9	2.4	1.9	1.6	48.3	8.9	1.1
	Farmer 11, 19	Pucara	47.4	3.1	1.5	0	42.7	4.1	1.3
	Farmer 12, 13, 20, 21, 22	Ayaviri	46.3	3.7	4.3	0.3	29.2	14.4	1.8
	Farmer 23, 24	Mañazo	32.0	2.6	3.7	0	44.2	17.0	0.6
		Average	39.3	2.7	3.5	1.3	44.3	7.8	1.1

F: Feed, R: Reproduction, H: Health, LM: Livestock management, L: Labor, I: Infrastructure, EM: Equipment and machinery.

TABLE 3: MILK COST OF PRODUCTION BY DISTRICT

Nama	District	Cost of production			
Name		Average €/I			
Farmer 1, 2, 14, 15, 16, 17	Acora	0.25			
Farmer 3, 4, 5	Atuncolla	0.17			
Farmer 6, 7, 18	Paucarcolla	0.20			
Farmer 8, 9, 10	Taraco	0.19			
Farmer 11, 19	Pucara	0.17			
Farmer 12, 13, 20, 21, 22	Ayaviri	0.23			
Farmer 23, 24	Manazo	0.25			
	Average	0.21			
	SD	0.03			

he following study was developed in 7 districts of Acora, Atuncolla, Manazo and Paucarcolla in Puno; Pucara in Lampa; Taraco in Huancane and Ayaviri in Melgar for 15 days. A semi-structured survey was designed with 90 questions.

In order to select dairy producers, two requeriments were established, to produce milk to sell it as raw milk and to use alfalfa as main source of forage. The statistical assay included an analysis of main components and then an analysis of conglomerate (cluster).



The analysis of conglomerate identified 3 groups of dairy producers with significant difference. The small one with a milk cost of production of € 0.22/lt of milk, the medium size with \in 0.19/It of milk and the large one with \in 0.19/It of milk. Certainly the large and medium size dairy producers show more efficiency in comparison with the small size of operations.

TABLE 1: CLASSIFICATION OF DAIRY PRODUCERS

Variable	Unit	Small	Medium	Large	SEM	Prob
Average cost	€/ I milk	0.22	0.19	0.19	0.06	0.02
N° dairy cattle dry season	Unit	12	38	58	21.8	0.001
N° dairy cattle rainy season	Unit	11	40	60	22.5	0.001
N° cows dry season	Unit	7	25	36	14.1	0.001
N° cows rainy season	Unit	8	26	36	14.1	0.001
N° lactating cows in dry season	Unit	4	11	28	9.2	0.001
N° lactating cows in rainy season	Unit	5	15	28	9.5	0.001
Total production in dry season	l/day	27.19	83	240	75.0	0.001
Total production in rainy season	l/day	39.88	154	300	94.7	0.001
Total average production	l/day	33.52	119	270	84.0	0.001
Average production cow/day	l/cow/day	7.98	9.87	10.2	3.0	0.32





Fig 2a: Farmer milking a cow

Fig 2b: Dairy processor



he milk cost of production is lower for dairy producers in Puno in comparison with



Fig 1a: Alfalfa



Fig 1b: Brown Swiss Cows

- the confinement systems in Arequipa and Lima.
- Dairy producers use oats (fresh or as hay) as an energy source during the year and alfalfa during the rainy season. Only 63% of the producers uses alfalfa hay in the dry season.
- Dairy producers who included alfalfa hay in their cows diet reduce in 28.4% the cost of production compared with the ones that don't use it in dry season.
- he average annual milk cost of production is € 0.21 per lt/milk. A more detail approach differenciates it from the one in rainy season (\in 0.19) and dry season (\in 0.24).
- The average break even point is 57.9%, the lowest is 22% and the highest 112.4%. 8.3%of dairy producers have a break even point above 100 which translates into losing money for the dairy operation.