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The milk industry seen from the farms of producers in the Ecuadorian Amazon.
La industria de la leche vista desde la finca de los productores ecuatorianos en la amazonía

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Abstract:
The food industry is important in Ecuador 's Amazon Region, so it is necessary to characterize the processes that intervene in the quality and quantity of milk production. A survey was carried out, in which 82 milk producing farms and 35 variables related to the processes of feeding, reproduction, production and animal health were analyzed using an analysis of Principal Components. This analysis showed that the efficiency of the production of milk is affected by three factors that influence 71% of the variance explained in the system and that relate variables to the productive and reproductive processes. The first component related to the variables, number of cows, calves, heifers, total births, births rate, load capacity of system, explains the 47.53% of the accumulated variance, the second component inferred in the variables service period, calving-calving, and age at incorporation into reproduction. It is concluded that if production of milk in quantity and quality is desired for the industry, attention must be paid to processes related to production and reproduction on the farms of producers.

Keywords: Keywords: Milk production, Prnicipal Components, industry, farms

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1. Introduction

In recent years, the trend towards increased milk production for the industry is around 30%, which generates a promotion and consolidation of the dairy industry, according to (Rocha y Rocha, 2014; Chimarro, 2016) the industry has exported to Venezuela and is looking for new Spaces for the commercialization of the product in Central America and Russia. The largest milk production in the equator

is concentrated in the Sierra. However, the Amazon has a positive trend in the development of industry and milk production, which already reaches 8%.

The knowledge of man in animal breeding and the application of technologies, play an important role in achieving milk production in quantity and quality, so that production is subject to different processes that occur on farms of producers governed mainly by Management of the herd, feeding, genetics and animal health, all linked to the process of industrialization of this food. For the reasons explained above the objective of this work is to characterize the factors that are influencing the production of the raw material for the milk industry and its commercialization.

2. Results and Discussion

The milk production as a raw material for the development and consolidation of dairy production in the Amazon has important challenges to depend on the management, reproduction, genetics and health processes of the animals; that occur in the producers, where technical knowledge are not achieve to increase quantity and quality milk production.

Table 1 shows the factors that affect the milk production efficiency studied in 82 farms in the eastern Amazon region. The 35 variables analyzed, only 12 related to the herd structure, reproduction and births conformation processes and the area devoted to the cattle breeding and the totality of mass were selected as the main exponents. The Principal Components analysis showed that there are three important factors in the milk production efficiency and that explain the 71.75 of the accumulated variance, the first factor is related to the efficiency in the herd and births structure, where it stands out that a good herd structure is important to guarantee replacement and production. Authors such as Herrera, Barrios and Flores (2013) and Grijalva (2014) considers that birth rates above 89% have a positive impact on milk production, although this can be adjusted by understanding and achieving quality in the reproductive process.

In component second it find the reproductive variables that present the greatest variability, among which is the inter-part period and the period of service with a factor of weight of 0.77 in both, is related to the management system where breeding prolongs the Weaning up to 12 months. The calf exerts a negative sensory effect to the reincorporation of the reproductive activity, increasing the service periods and inter-partal, coupled to the feeding system that does not supply the energetic-protein requirements, the females diminish their somatic and corporal development upon incorporation. Results in the reproduction were similar to indicate by Orantes-Zebadúa et al. (2014)

Component three grouped the variables total area the farm and total of animals with weight factor of 0.68 and 0.64 respectively. These variables present great variability, considering that there are family farms from 5 ha considered small to medium and large that can reach 233 ha with slopes from 7 to 80%.

Similar behavior presents the animals number in the herd and its structure. That does not depend in many cases on the size of the farm since in general the number of animals only reached 102 achieving in many cases that the capacity of the system is underutilized and in others overpower it, because of the large amounts of land incompatible with livestock activity. Therefore, these indicators are important to take into account to correct design the farm production system.

Nader (2011) point out that one of the most important factors that influence the definition of the typology of the farms is undoubtedly the size of the farm and the herd, on which production alternatives depend heavily.

Table 1. Factors that affecting milk production Efficiency for industry.

Component	Related variables	Weight factor	Own value Cumulative	Cumulative variance explained, %
Efficiency in the structure of the herd and births	Cows, heads	0,94	4,50	47,53
	Calves, heads	0,83		
	Heifers, heads	0,78		
	First calving cows, heads	0,82		
	Animal load, UGM.ha-1	0,94		
	Total deliveries in the year	0,87		
	Birth rate, %	0,90		
Efficiency in the reproduction process	Period of service, days	0,77	1,53	66,94
	Inter-part period, days	0,77		
	Age of incorporation into reproduction, months	0,80		
Size of farm and herd	Total area, %	0,68	1,39	71,75
	Total animals, heads	0,64		

3. Materials and Methods

The province of Napo was a reference for the milk production from the Ecuadorian Amazon. For this purpose, 82 milk farms were evaluated where 60% of the farms have Holstein and Jersey breeds the rest of the breeding of these breeds and the Brows swiss. A survey was applied in which 35 variables related to the feeding, reproductive, health processes, application of technologies in the farms were measured. The Multivariate Analysis of Principal Components was applied to decant the variables of these processes that are influencing the obtaining of the raw material for the milk industry. We used the SPSS program version. 19

Conclusions

The factors that affect milk production for the industry are expressed in three components that explain the 71.75% of the accumulated variable and are related in 12 variables that represent the Farms efficiency processes in the structure of the herd, birth, reproduction and size.

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Author Contributions

All authors have the same contribution.

Conflicts of Interest

There is no conflict of interest of the authors

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