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Low productivity and quality of the primary link of the cattle production chain as an input for the industry in the Ecuadorian Amazon Region.

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Abstract:

The objective of the study was to evaluate the main causes that affect the low productivity and quality of the primary link of the cattle production chain as an input for the food transformation industry and related to other destinations in the Ecuadorian Amazon region (RAE). Questionnaire were conducted with 399 variables from each of the Amazonian provinces to evaluate behavior in the productive, environmental, economic and social dimensions of livestock systems and animal behavior of the different breeds. The results were analyzed once the livestock systems were typified in each productive purpose, we analyzed the discrete variables that affect the behavior of the systems, related to the productive dimensions (individual milk production and birth rate) and ANAVA for breeding breeds more frequent in each of the provinces. The composition of the systems in the RAE showed that the most frequent breeds are Criollo (35.9) and mestizos without records (63.3%) with a specialized breed deficit that means that the agroindustrial sector is almost non-existent. The Norman races; Holstein and Brown Swiss present births of 82.47; 78.19 and 66.47% respectively, however they do not express their milk production potential due to the management system used. It is concluded that the link that presents the greatest vulnerability is the primary one (livestock farmers) mainly because in the RAE are producing with important productive deficiencies.

Keywords: amazon; Livestock efficiency; Breeds, bovine.

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1. Introduction

Although not contributing large amounts of milk and meat to the country, it does have one of its main agricultural activities, which means that a significant proportion of the population is engaged in the management of livestock systems Cattle. However, this represents large levels of advancement of the agricultural frontier, in addition to impacting the ecosystem (MAGAP, 2014 and Jarrín et al, 2016).

The pre-selection of the meat chain of standing cattle as the object of analysis responds to the priorities established at national level to tax food security. The country's economic

2. Results and Discussion

Table 1 shows the composition of breeds of the first productive link of bovine cattle in the whole RAE, for which a deficit of specialized races is observed and the lack of registration of other races that implies that, the meat agroindustrial sector in the RAE is Almost non-existent, slaughtering purebred beef cattle only in order to supply the local market, similar results noted (Vargas et al, 2015). The product with higher added value (boneless meat) that can be traded at 5,0 USD / kilo does not take advantage of its potential. Therefore, the main vulnerability is the primary producers, mainly because in the RAE they are producing with cost structures above the price they receive per kilo of live meat (2,3 USD / kilo¹), (Ríos and Benítez , 2015). Similar in behavior with producers who dedicate to milk production, farmers provide milk through intermediaries that carry the transport, the price they perceive ranges from 0,35 to 0,39 USD / liter.

The reproduction is considered the most important cattle-raising process in any livestock operation, since it defines the structure of the herd, the relative potential of production that is expected from the livestock system, the feeding program that must be established to obtain high and stable yields (Viamonte, 2010; Benitez et al.). Table 2 shows the races, individual milk yields and reproductive efficiency measured by the birth rate of the different races in the RAE, where it can be seen that the Norman races; Holstein and Brown Swiss present the highest birth rates, however they do not express their milk production potential due to the management system, the reproductive capacity of the herds is the last physiological priority of the animals, it is complemented when all the food and physiological requirements Are covered, hence the importance of maintaining the highest possible efficiency in this process in livestock systems.

The RAE cattle herding specialization has a clear trend. Morona Santiago is the province with the highest presence of cattle (43,8%) followed by Zamora Chinchipe (25,7%); Napo (9,7%) and Sucumbíos (9,58%). Pastaza participates only with 5,1% of the cattle population. In the province of Pastaza, the existing management systems are characterized by small farms, especially family farms.

and social policy raises the need to promote this area (GAP, 2012). It is for this reason that in the criteria evaluated for the scope of industrialization for deboned meats; Cuts of meat, sausages, pasteurized milk and its by-products, base the selection of the productive chain cattle standing and, at the same time of the products that derive from this line, that is why the objective of this work was to evaluate The main causes that affect the low productivity and quality of the primary link of the cattle production chain as an input for the food processing and related industries in the Ecuadorian Amazon Region.

Table 3 shows that RAE milk production represents only 7,9% of the milk produced at the national level. Morona Santiago is the province that produces the largest quantity of milk (36,3%), however, the yields of liters / cows are lower, due to non-milk specialties. Followed by Zamora Chinchipe (32,0%), however 46,5% of the production destined for the industry is processed by local companies and its products are marketed in stores mainly in the form of fresh cheeses, because of their low levels of production.

Ríos, (2016), referring to the destinies of milk have different behaviors: first, those provinces that allocate over 60% of their milk production for sale in liquid, in this group is Napo and Sucumbíos. Second, those provinces that allocate between 30 to 40% for sale in liquid, is the case of Pastaza and Orellana. Finally, the provinces that allocate less than 30% of the milk to be sold in liquid being processed in the relevant UPA, here are Morona Santiago and Zamora Chinchipe; these results demonstrate the need to industrialize dairy products derived from livestock production Bovine.

The production alternative, with rare exceptions, is based on grazing to tied up paw, where animals remain confined in a certain area, a small number of producers not specified, use electric fencing to control the animals, leaving one grazing area per animal Similar to that used in the tied up paw. As a complement to the pasture we use balanced or concentrated, which are supplied without following a rational pattern, varying the frequency of consumption from two to three times per week, to once a day. The supplement is supplied equally to all milked animals, regardless of the production potential of the animals, the state of pregnancy or duration of lactation, and the potentialities of the staple food. Rarely, shrubs, protein plants or legumes are used to supplement the diet of the herds. Vargas et al. (2000) reported that 78,76% of the total mineral salts were considered as a necessity, using popular formulas in the market, but without considering the soil limitations or the environmental characteristics of the Amazon. Factors that determine the productive efficiency of livestock systems dedicated to the production of milk and meat in the RAE is the size of the herd in operation and the volume of production. Similar results

showed Orantes et al. (2014), in the Chiapas region of Mexico in the bovine production system of DP, where their feeding is based on grazing, with a minimum of

supplementation and limited to the seasonality of fodder in the dry season, affecting weight and commercial value of the price of milk and meat.

Table 1. Composition of breeds of the first productive link of cattle in the whole RAE.

Provinces	Napo	Orellana	Pastaza	Sucumbíos	Morona Santiago	Orellana	RAE	%
BREEDS OF CATTLE BOVINE, cbz	Cbz	Cbz	Cbz	Cbz	Cbz	Cbz		
Creole	29,154	21,281	4,133	22,841	57,126	53,184	187,719	35.9
Half-breed without registration	21,468	13,106	22,529	26,150	171,604	76,425	331,282	63.3
Half-breed With registration	130	139	82	386	255	367	1,359	0.3
Pure meat blood	23	937	*	52	11	101	1,124	0.2
Pure milk blood	70	328	*	41	21	150	610	0.1
Pure blood double purpose	139	151	*	122	186	449	1,047	0.2
TOTAL	50,984	35,942	26,820	49,591	229,205	130,677	523,219	100

¹Average unit cost of production for beef cattle considering family labor estimated for this research. (Ríos, 2015).

Table 2. ANAVA results for the most frequent breeding breeds.

Breeding Breeds		Brown Swiss	Holstein	Half-breed Charoláis	Half-breed Brown Swiss	Half-breed Holstein	Normando	Otros Half-breed	Sign
Females reproduction in	\bar{X}	25,38	18,61	12,4	16,91	17,44	25,6	17,92	NS
	EE	3,62	1,97	6,47	3,09	2,26	6,47	4,01	
Milk yields, l/v/ day	\bar{X}	5,77	7,98	4,6	7,13	6,34	5,54	7,34	NS
	EE	0,97	0,53	1,73	0,82	0,60	1,73	1,07	
Birth rate, (%)	\bar{X}	66,47 ^{abc}	78,19 ^{bc}	58,24 ^a	62,52 ^{ab}	66,87 ^{abc}	82,47 ^c	57,22 ^a	*
	EE	0,41	0,22	0,73	0,35	0,25	0,73	0,45	

Table 3. Yields of milk production in the provinces of the RAE.

Provinces	TOTAL		DAILY DAIRY PRODUCTION		Performance, liters. cows -1
	UPAs	Heads	Heads	Liters	
Napo	2,394	50,984	7,764	36,476	4,7
Orellana	2,705	35,942	4,876	17,806	3,7
Pastaza	2,145	26,820	3,245	13,281	4,1
Sucumbíos	4,117	49,591	6,699	24,246	3,6
Morona Santiago	10,918	229,205	31,064	105,086	3,4
Zamora Chinchipe	6,725	130,677	22,742	92,655	4,1
RAE	29,004	523,219	76,390	289,550	3,8

3. Materials and Methods

The determination of the scope of the analysis of the beef chain in the Ecuadorian Amazon Region (RAE) was carried out from the database derived from surveys with 399 variables from each of the Amazonian provinces to evaluate the Behavior in the productive, environmental, economic and social dimensions of livestock systems and animal behavior. The data obtained during the sampling were tabulated in data matrices organized in Excel spreadsheets, where the cattle systems visited were located in the rows and the variables studied were in the columns. Given the size of the database, it was divided for

productive purposes, the first with the information of the farms dedicated to the production of milk, the second corresponding to the herds dedicated to the breeding, most of which also feed part or the totality of the males they generate and the third to the herds specialized in the fattening of males or females for the slaughter that their animals acquire from what is available in the market. Once the livestock systems were typified in each productive purpose, we analyzed the discrete variables, which affect the behavior of the systems, related to the productive dimensions.

4. Conclusions

- The production costs of each link in the primary cattle production chain are not known.
- The link that presents the greatest vulnerability is the primary one (cattle ranchers), mainly because in the RAE they are producing with important productive deficiencies in the management of livestock systems and the non-use of breeds suitable to the Amazonian ecosystem.

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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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