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RESEARCH ARTICLE

PRODUCTION OF GOAT MILK IN A RURAL PROPERTY IN THE SUMÉ - PB – BRAZIL CITY

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ABSTRACT

The objective of this study was to analyze the milk production system of crossbred goats in a rural property in the municipality of Sumé, Cariri Paraibano mesoregion, trying to correlate the milk control, the feeding, the facilities, the milking, the used labor, the with a view to developing public policies and regional incentive programs for the dairy sector. Thus, in order to reach the objective of the work, a research was carried out in a goat milk production unit, located in the city of Sumé - PB, where 10 (ten) crossbred goats were sampled. Therefore, based on the adopted methodology, it can be observed that Among the factors that influence milk production, we have the age of the goats constituting an important source of variation, because with the advancing age there is a considerable increase in the production of goats. milk, where it is in production, increases until 4 years, then stabilizes to begin to decline from 6 years. Given this scenario, it can be observed that Even without proper techniques and management, the animals showed an adequate production average according to each system.

INTRODUCTION

Milk is the natural food with the highest concentration of calcium, an essential nutrient for the formation and maintenance of human bones. It also contains a good amount of phosphorus and manganese, which is indispensable for fat utilization and brain functioning. Milk also has vitamin A, B1, B2, minerals and complete proteins that promote the formation and maintenance of tissues. In addition to its nutritional value, milk is among the most important products in agriculture for its participation in generating income and jobs (ZOCCAL, 2004).

Analyzing economically, milk today is one of the first six most important products of Brazilian agriculture, ahead of traditional products such as processed coffee and rice. The Milk Agribusiness and its derivatives play a relevant role in food supply, job creation and income generation and export earnings, placing the Dairy Industry in 12th position in total job creation, ahead of sectors such as construction, textiles, steel and others (MARTINS, 2006). Brazil, being almost a tropical country with different edaphoclimatic conditions, presents dairy cattle production practiced throughout its territory, with great diversity of milk production systems. In the different types of milk production systems, mainly in dairy cattle and less frequently in dairy goats, there are, on the one hand, highly skilled producers, who invest in technology and enjoy economies of scale and differentiate their product, receiving more for the volume and quality achieved, and on the other, rudimentary producers, living off the income generated, with little or no preparation in production, but still vital for the family economy, because the exclusion of these small producers would generate serious social problem, leading to rural exodus and increased informal milk (CARVALHO and OLIVEIRA, 2006). Therefore, production systems must be sustainable and competitive, economically viable, stable and environmentally friendly.

Goat breeding is one of the most important activities for the survival of producers in the Brazilian semiarid region. A production system consists of the combination, in space and time, of labor force quantities and various means of production such as land, machinery, equipment, improvements and inputs to obtain different agricultural, vegetable or animal productions. With the increase of the rural population and the reduction in the size of the farms, dairy goat rearing has been undergoing structural changes in its traditional management system, which may change the productive system (SOUZA et al., 2010).

In the Paraíba Cariri region dairy goat breeding plays an important socio-economic role; however, the existence of bottlenecks throughout its productive arrangement (BANDEIRA et al., 2007) has prevented the activity from assuming a prominent position.

Proper animal nutritional management avoids unnecessary spending on milk production and maximizes the profits from its marketing. So, in view of this scenario, the present work aimed to analyze the milk production system of crossbred goats, in a rural property in the municipality of Sumé, Cariri Paraibano mesoregion, trying to correlate milk control, feeding, facilities, milking, the manpower used, sanity, with a view to the elaboration of public policies and regional incentive programs for the dairy sector.

There is a great deal of writing in the agronomic literature on milk production systems. Even so, the dairy activity has evolved from a traditional production model to a more competitive one, demanding from the scientific community increasingly agile solutions to obtain production increases and decreasing costs on a sustainable basis.

An establishment directed towards agricultural activity is essentially a factory where products such as meat, milk, wool, grains and others are produced from raw materials that include land, water and fertilizers as a means of subsistence and also to satisfy certain owner's wishes. Between the raw material and the final product there are a series of interactions between the components that make up a true production system. The animal should be considered a machine for transforming pasture into man-made products and not as a fodder mill for manure (MARASCHIN, 1994).

The organization and study of production data is important because when the farmer starts using indexes to analyze the production structure, he creates a pattern that can be compared with numbers published by other individuals, and thus will be able to detect problems, point out virtues and make progress. When there is no term of comparison, it is difficult to establish proper judgment and even more complicated to propose changes in the concepts established by tradition (FARIA and CORSI, 1986).

The performance of milk production depends on the genetic potential of the animal, the quality of the diet consumed and the voluntary consumption, being the quality of the diet and the consumption according to the pasture and the animal. Therefore, as long as the genetic potential of the animal is not limiting, the individual performance will be based on the characteristics of available forage, the characteristics of the animal (species, physiological state and type of production) and the animal behavior regarding pasture conditions (DAMASCENO et al., 1997).

The quality of milk as a food and raw material for

the dairy industry depends on its composition, derived in part from nutritional factors, rumen fermentation and endogenous metabolism of the goat (FREDEEN, 1996). Among the many factors responsible for efficient dairy farming, proper nutrition stands out (NUSSIO, 1993).

Cow's milk suitability, pasture nutritional value and forage intake determine cow's milk production. Under grazing, the consumption of green dry matter is mainly affected by the availability of forage, but also by the vegetation structure: density, height, leaf-stem ratio. Grazing pressure is the main management factor determining milk yield per cow (kg milk / cow) and per hectare (kg milk / ha) (GOMIDE, 1994).

Pasture is the major component of ruminant diets, especially in tropical regions, where, except in regions of high population density, land is a low cost, and flatly available factor. Even in areas where land use is intensive, rationally managed pastures play an important role in preserving soil physicochemical characteristics, recycling nutrients and controlling soil erosion (VILLAÇA et al., 1985).

Lactating dairy goats require good quality forage in the diet to maximize their production, maintain health and sustain a stable rumen environment. Large variety of forages can be used for the silage production process. Corn silage is considered standard due to its nutritional value (ALMEIDA et al., 1995). The main factors responsible for the conversion of forage into animal production are: energy intake, energy digestibility and digestible energy conversion efficiency (WALDO and JORGENSEN, 1980).

In addition to consumption, the energy content of ruminant feed should also be evaluated, which has a high correlation with nutrient digestibility, which allows the animal to use nutrients on a larger or smaller scale. In ruminants, fiber is responsible for the large variation in the digestibility of roughage, as it usually has a negative relationship with digestibility (VAN SOEST, 1967).

Regional differences, which are characterized by geographical areas with different specific types of soils, climate, pastures, altitudes, etc., induce dairy cattle from different herds to vary in levels of nutritional requirement for maintenance and production. , leading to own management systems and demanding different physiological efforts from the animals, a fact that leads to different levels of production between herds (GIANNONI & GIANNONI, 1988).

Water is the most quantitative food requirement for dairy cattle. Lactating goats need more water in relation to their live weight than other categories of animals because milk contains 87% water. Animals can lose up to 100% of their fat (fat) and more than 50% of their body protein as they survive, but by losing 10 to 12% of their body water, they dieTherefore, the water offered must be clean, fresh, have low solids and alkalinity levels and be free of toxic compounds. A 2% salt (NaCl) concentration in water may be considered toxic to cattle. Thus, an abundant source of clean, high quality water should be a priority on a rural property. The water ingested by cattle has the function of cell tissue nutrition and to compensate for losses caused by milk, feces, urine, saliva, evaporation (sweat and respiration) and also to maintain homeothermia by regulating the body and internal organs temperature. (CAMPOS, 2001).

Considering that concentrate mix feeding is the main cost of production, the way to increase the producer's profitability would be related to the adequate use of available low cost resources, such as pasture. The “key concept” would be grazing instead of fuel, machinery and equipment costs used in the forage harvesting process. The immediate benefit is economic, with reduced milk production costs. In addition, investments in facilities, especially those for shelter animals and machinery, are lower when comparing grazing systems with those in confinement (MATOS, 2002).

The semi-intensive dairy farming system consists of keeping cattle on pasture and reinforcing their feed in partial confinement when necessary, allowing greater production stability. It is more practiced in smaller properties, being adopted mainly in dairy cattle breeding (MARQUES, 2003).

The intensive rearing system is the most recommended for higher breed cattle. It consists of raising the highest production animals, confined in the milking stable itself or in controlled management sheds. The advantage of the intensive rearing system is the efficiency of management and the consequent increase in productivity, as food can be stored and supplied throughout the year (Banet, 2008). The intensification of milk production systems indicates that goats should be covered as soon as possible after calving. However, the best fertility rates are obtained with services from 60 days postpartum. The interval from delivery to first service is on average 70 to 90 days (SILVA et al., 1992). However, longer intervals occur in first and second calving females due to lactation stress and still incomplete physical development. Additionally, postpartum body conditions and the degree of blood may influence the duration of this interval (DIAS, 1983).

MATERIAL AND METHODS

The municipality of Sumé is located predominantly in a typical northeastern semi-arid region, characterized by a very monotonous pediplanation surface, predominantly smooth-undulating relief, cut by narrow valleys with dissected slopes. Residual elevations, ridges and / or hills punctuate the skyline. These isolated reliefs testify to the intense cycles of erosion that hit much of the northeastern backwoods. Part of its area, to the north, is part of the geoenvironmental unit of the Borborema Plateau.

The vegetation is basically composed of Caatinga with sections of deciduous forest. The climate is Tropical Semi-Arid, with summer rainfall. The rainy season begins in November and ends in April. The average annual rainfall is 431.8mm. With respect to the soils, in the Long and Low Levels Slopes of the gentle undulating relief occur the poorly drained Planosols, medium natural fertility and salt

problems; Tops and High Strands, non-Calcic, shallow Brunos soils and high natural fertility; Tops and High Strands of undulating relief occur the Podzolics, drains and average natural fertility and the Residual Elevations with the Litholic, shallow, stony soils and average natural fertility.

"The research was carried out in a small goat milk production unit, located in the Conceição community in the city of Sumé - PB. Located south of the state of Paraíba.

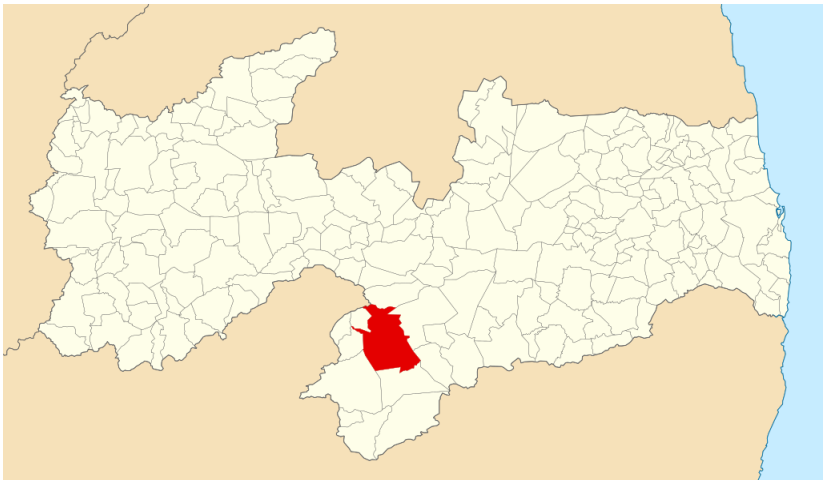

Figure 1. Geographic localization of the municipality of Sumé, Paraíba State.

Data were collected at Fazenda Malhada da Pedra, in Conceição community, Sume-PB, from April to August 2019, and information on daily milk production, goat identification, food management and milking management. In addition, a photographic record was made for a better view of the property's facilities.

Ten (10) lactating goats were sampled, all crossbred Saane breed, submitted to the intensive production system.

RESULTS AND DISCUSSION

According to the data obtained in the research (Table 1), it was found that in relation to the age factor, there was a variation between two and six years, and six of these goats came from the state of Pernambuco, and the rest originated from the state from Paraíba.

Table 1: Information on the animals analyzed by categories of: production system, age, number of calves, breed, daily milk production and goat origin. Malhada da Pedra Farm, Sumé - PB, 2019.

Cow identification	Production system	Age years)	Number of Cubs	Breed	Average daily production (kg)	Origin
Cow 1	Intensive	5	5	Crossbreed	4,049	Sumé - PB
Cow 2	Intensive	4	4	Crossbreed	3,7	Sertânia - PE
Cow 3	Intensive	4	4	Crossbreed	4,023	Congo – PB
Cow 4	Intensive	3	4	Crossbreed	2,832	Sumé – PB
Cow 5	Intensive	5	5	Crossbreed	3,8	Sumé - PB
Cow 6	Intensive	3	4	Crossbreed	2,404	Tuparetama - PE
Cow 7	Intensive	2	1	Crossbreed	3,541	Tuparetama – PB
Cow 8	Intensive	6	7	Crossbreed	2.899	Tuparetama – PE
Cow 9	Intensive	3	4	Crossbreed	2,736	Tuparetama – PE
Cow 10	Intensive	4	4	Crossbreed	3,213	Tuparetama – PE

Among the factors that influence milk production, we have the age of the cow constituting an important source of variation, because with advancing age there is a considerable increase in milk production, where this production increases until five or six years stabilizing then. These goats, even with advanced age, were within the average production of the herd subjected to the intensive system, however, according to the owner these animals when younger presented average daily milk production of 2.5 kg, proving the aforementioned in the literature, where goats from the 4th year of life tend to decrease daily milk production.

The facilities of the goats reared in the intensive system consisted of stalls, no milking parlor, food reserves in the form of crushed straw maize, sorghum and forage palm, absence of silo, use of shed to store equipment, water available in the area. Pasture area was well water with free access to the goats of this system. Existence of a water reserve tank, but the goats do not have access, there is salt shaker in the pasture, only in the stalls.

The daily feeding of the intensive system goats consisted of elephant grass, forage palm and in the late afternoon sorghum grass trough in the amount of 2kg per goat, plus corn concentrate, soybean, wheat. Mineral salt was freely available in both pasture and corral areas.

The animals were milked twice a day, once in the morning at 6 am and once in the afternoon at 3 pm. The milking was performed by the cowboy-keeper through a manual milking process until the udder was completely depleted.

The goats were milked in a paved place, handled calmly and without aggression so that they do not hide the milk. The cowboy always rinses his hands and arms with mild soap and water before starting milking, letting them dry in the wind, washing the goat's teat only with running water without drying the teat.

Milked milk is placed in plastic containers previously washed with mild soap and water and dried at room temperature. After withdrawal, the milk of each cow was weighed by an analytical balance, and the values of each animal were recorded for milk control of the present study, which will be based on the goat's production in kilos of milk per day (Table 2).

After milking, the milk was strained with fine-mesh sieve and placed in several larger plastic containers with a capacity of up to 25 liters. After milk removal, no type of disinfection of the goat's teat was performed.

The information on the total production of milk produced indicates that, considering the genetic fitness of each animal, the climate of the small production unit, since there is no rainfall all year long to maintain a good pasture, the system Intensive production is the most suitable, as it provides more advantageous results to the small producer, since there is greater management efficiency and a consequent increase in productivity. However, it should be noted that its cost is higher than that of the semi-intensive system, and the present work did not deal with economic analyzes of viability of feeding the cattle herd. However, the research shows that the small producer rightly preferred to invest more in the herd that he saw to be of higher racial standard, which certainly gives him more profitability.

Goat's milk production and quality are influenced by environmental factors, mainly feeding, and genetic factors. Research by Embrapa found that goat milk production was influenced by the postpartum diet, where a higher nutritional level This contributes to increased milk production.

It could also be observed that in the property, no annotation was made, either of zootechnical indexes or of economic information. Thus, it is shown that the producer is poorly organized and unprepared, therefore, to structure the production of his farm and thus seek patterns that can detect problems, point out virtues and evaluate the economic viability of his business. It would be advisable to annotate zootechnical and financial data, with information logging and management reports, so that the small producer could make more informed decisions and provide necessary improvements in production.

Regarding the marketing of milk, the producer reported that all production was intended for sale in the plant maintained with state and federal resources in the city of Sumé. The milk is transported every two days and after evaluation by the supervisor of the plant is acquired by them.

When asked about the activity developed and its main difficulties, the producer reports that the biggest disadvantages are in relation to the cost of production that becomes high due to food, transportation and the low cost of selling the product.

CONCLUSIONS

- Even without proper techniques and management, the animals show a suitable production average according to each system.
- The search for adequate knowledge in the livestock sector can improve milk production performance, with competitiveness and sustainability.
- For the reality of producers at the property level assessed in this research, the biggest challenges lie in the high cost of production and the low values paid for the final product.

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