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Ethno-zootechnics from the perspective of dairy farmers in the brazilian cerrado

Etnozootecnia na perspectiva de produtores de leite no Brasil, bioma Cerrado

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ABSTRACT

Considering the valuable environmental and cultural heritage existing in the world in the context of agribusiness, it is possible to highlight the role of ethno-zootechnics as an important new tool for understanding these values, the rescue and generational transmission of livestock knowledge are relevant. Given this, the objective was to understand the perception of milk producers from the Ethno-zootechnical perspective. Through a semi-structured script, questionnaires were carried out with 41 interviewees and representatives of dairy farms to register the relevance of basic cultural knowledge associating them with social, economic and social environmental development. Cluster analysis was carried out using the hierarchical method. It was concluded that part of the dairy farmers located in the Northwest region of Minas Gerais state, the man/animal relationship is important, with traits of affection and utility. The transmission of traditional knowledge of the dairy activity is important, and that they believe that scientific and traditional knowledge can be beneficial in rural activity.

KEYWORDS: animal science; rural development; traditional knowledge.

RESUMO

Considerando o valioso patrimônio ambiental e cultural existente no mundo no contexto do agronegócio, é possível destacar o papel da etnozootecnia como uma nova ferramenta importante para a compreensão desses valores, o resgate e a transmissão geracional do conhecimento pecuário são relevantes. Diante disso, objetivou-se compreender a percepção dos produtores de leite na perspectiva Etnozootécnica. Foram aplicados questionários, por meio de um roteiro semiestruturado, com 41 entrevistados, representantes de fazendas leiteiras para registrar a relevância dos conhecimentos culturais básicos associando-os ao desenvolvimento social, econômico e socioambiental. A partir dos dados coletados procedeu-se com análise de cluster foi realizada pelo método hierárquico. Concluiu-se que para parte dos produtores de leite localizados na região Noroeste de Minas, a relação homem/animal é importante, com traços de afeto e utilidade. A transmissão do conhecimento tradicional da atividade leiteira é importante, e que eles acreditam que o conhecimento científico e tradicional pode ser benéfico na atividade rural.

PALAVRAS-CHAVE: zootecnia; desenvolvimento rural; conhecimento tradicional.

INTRODUCTION

Ethnoscience emerged in the United States, in the twentieth century, with a new approach in which cultures were no longer perceived as sets of artifacts and behaviors and started to be considered as knowledge systems (ALVES et al. 2010). Given this, it can be considered that local knowledge is a series of accumulated knowledge about their experienced relationships. From this thought, it can be deduced that the knowledge of these communities is a relevant tool for studies in different areas of knowledge.

According BISCHOFF et al. (2016) the knowledge and practices related to the use of medicinal plants for the treatment of human and animal diseases has been transmitted across many generations in different cultures worldwide. The maintenance of biodiversity in traditional agroecosystems is not random, but depends on a complex set of indigenous technical knowledge systems (ethnosicence) (ALTIERI 1993).

In this way, considering the valuable environmental and cultural heritage existing in the world in the

context of agribusiness, we can highlight the role of Ethno-zootechnics as an important new tool for understanding these values and the rescue and generational transmission of livestock knowledge are relevant. In this sense, according to DONAZZOLO et al. (2012), there are still some knowledge systems, in addition to remnants between the old and the modern that they share in the daily lives of rural families, which must be rescued. At certain times, rural communities are agents of development, the result of the baggage of knowledge, some traditions involve the reproduction of memories and symbolic ties that preserve practices and rationalities of work and management, others end up bringing difficulties concerning to the production system that is oriented to market demands.

In this sense, ethno-zootechnics is characterized as a field of knowledge crossing, where the importance of rural within societies, its history and evolution, in addition to the relationships between man, animal and environment, become important cultural parameters for social, and economic environmental development (LAURANS 1977). In this context, some rural communities may be linked to traditional populations, while others may not. According to STEFANELLO & NOGUEIRA (2012) traditional populations are defined as those who know nature, interact intimately, in symbiosis and dependence, know the secrets, and their properties and use their resources to live and transmit these values from generation to generation (STEFANELLO & NOGUEIRA 2012)**.** In this sense, a line of studies is developed – Ethno-zootechnics, in a broader way, with the aim of understanding and valuing the social, economic and environmental issues present in societies that are immersed in a close relationship of experiences with agribusiness. Rural communities have a direct and daily relationship with nature, the social and cultural space, as their way of life and reproduction is directly linked to the exploitation of resources such as land, water and fauna (REZENDE et al. 2021).

To ensure success within the complex structure of agribusiness with sustainable development, rural communities that work with dairy farming need to preserve animal welfare, quality of products from animal production, disease control, food and many others. Corroborating with the rescue of traditional knowledge and its relationship with the culture of the people, this research work aimed to understand the perception of dairy farmers and their understanding about ethno-zootechnical concepts. Such knowledge allows us to we will have advances in animal production aligned with agriculture sensitive to human food, and based on principles of sustainable development. Therefore, there is a need for the advancement of this knowledge, because one must understand the relationships between man, the environment, and animals, and when creating a model of development of local animal production, we have to consider the biological, social, cultural, economic, political and productive systems, and to realize this model, scientific knowledge and local knowledge must be highlighted.

MATERIAL AND METHODS

Through a semi-structured script, questionnaires were carried out with 41 interviewees, representatives of dairy farms located in the cerrado biome in the Northwest region of Minas Gerais. Rural producers were chosen at random in agricultural stores, agricultural cooperatives and street markets. The requirement to participate in the research was to be a milk producer and to agree to participate through the Free and Informed Consent Term as approved in a research notice issued by the Dean of Research and Graduate Studies. The objective of the questionnaire was to register the relevance of basic cultural knowledge and associate it with social, economic and environmental development. The questionnaires were carried out between January and December 2021.

The semi-structured script involved the following categories of analysis: Are you a native of the region (Northwest of Minas)? How long have you been a rural producer? Do you have any technical training (course)? Do you receive any kind of Technical Assistance? What animal species do you keep on your property? What do the animals raised on the property represent to you? If you breed more than one animal on your property, why do you breed more than one species? Among the different animals created, which species are you most fond of? By what means do you acquire the dairy animals (dairy cows) for the property? In ancient times and even today, for some properties, the culture of naming milk cows is very strong in our region. Do you carry out this practice with animals? Why do you carry out this practice (naming animals) if animals are named? From the milk produced on your property, do you produce by-products? If you produce by-products from milk, which ones are produced? Was the knowledge of use and preparation of these by-products passed on to you traditionally? Do you consider the propagation and preservation of these values (knowledge) important? If you consider it important to propagate these values, do you pass them on to your children, grandchildren, great-grandchildren, siblings or any relatives? If by-products are produced, what is their purpose? Do you think that the sale of milk by-products is more profitable than the sale of In

Natura milk? Regarding the quality of these by-products, do you believe that when the animal is treated more ethically, following Animal Welfare standards, the quality of the by-products is better? Do you consider your profession (farmer) a tradition? Was his daily knowledge on the farm passed on by the family in a traditional way? At the time of milking, who is this function performed by? If by-products are produced, who is this function intended for? Do you know or have you heard the term “Ethno-zootechnics”? Since Ethno-zootechnics is a science that seeks to intertwine traditional and formal (scientific) knowledge about animal husbandry, do you believe that traditional knowledge can significantly contribute to the scientific field, in the search for studies about this creation? Do you believe that traditional and formal (scientific) knowledge can come together at some point, generating a new way of thinking and animal creation? Do you think that a rural producer's profession is valued in Brazil?

After the interviews, the collected data were organized in a spreadsheet using the Microsoft Excel program for descriptive statistical analysis of the results. Then, cluster analysis was performed according to MALHOTRA (2006), using the hierarchical method through the Ward model. After cluster analysis or cluster analysis, homogeneous groups called clusters or conglomerates were created.

RESULTS AND DISCUSSION

After applying the cluster analysis, we can see the formation of three groups (Table 1), in which group 1 had 20 dairy farmers with affinities, as well as in group 2, and only one producer in group 3, which proved to be different of others.

Table 1. Number of dairy farmers per homogeneous group.

Cluster (Group)	Number of Producers per group
1	20
2	20
3	1

It can be seen in Table 2 that many of the milk producers, mainly from groups 1 and 3, do not have any type of technical qualification regarding agricultural activity. This observation reinforces the thesis of the importance of traditional knowledge in agricultural activity because despite not having training in the area, they have experience since most of them have been rural producers for more than 15 years (Figure 1).

Table 2. Specialization and technical assistance.

Specialization	Group 1%	Group 2%	Group 3%
Agricultural area	20	80	0
Non-agricultural area	0	0	0
None	80	20	100
Receive Technical Assistance			
Private	65	0	100
Governmental	20	0	0
None	15	100	0

This observation corroborates THEVENIN et al. (2019) in which the recognition of traditional knowledge of peoples and communities proved to be essential in the success of agroforestry activity. In group 2, 80% of the producers have some type of technical training in the area, which did not interfere with the appreciation of traditional knowledge.

SOUZA et al. (2016) in a study of a group of women farmers in the municipality of Otacílio Costa/SC, with activities aimed at agroecological practices and holding direct sales fairs, reported that even using agricultural techniques used in the production process, care was taken to rescue the traditional knowledge created and transformed through experiences over many decades in its activities.

The results present the interesting information about the provision of technical assistance, where 65 and 100% of the producers in groups 1 and 3, respectively, receive this type of assistance, although the 2017 agricultural census (IBGE 2017) shows that only 25, 2% of the producers receive some type of assistance in the area of cattle breeding, corroborating the result of group 2, where 100% of the producers in this group do not receive any type of technical assistance on their property. MONÇÃO et al. (2019), observing the transfer of zootechnical technologies to family farmers in the municipality of Espinosa/MG,

highlighted that the lack of technical guidelines and accurate information is decisive in the non-growth of animal production activities in the municipality, showing that many producers only have agricultural stores as a source of guidance.

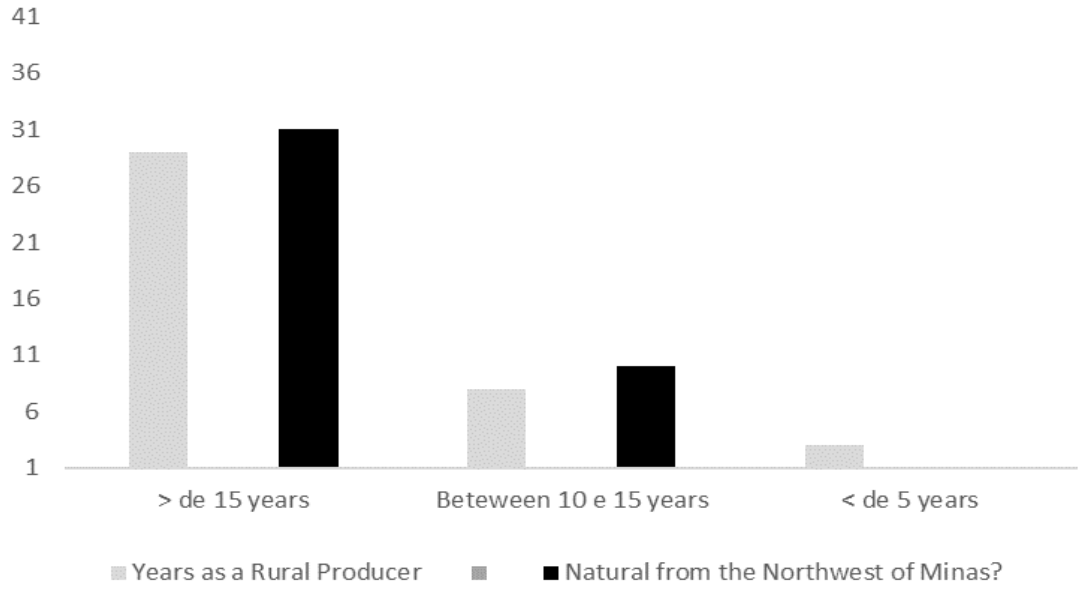

Figure 1. Activity time and birthplace.

Another important fact is the presence of several species of animals on the property (Table 3), where only 10% of producers (two producers) in group 1 breed only one species out of a total of 41 producers studied.

Table 3. Type of relationship, affectivity and pluriactivity in animal production.

Animals on the property	Group 1%	Group 2%	Group 3%
Bovine; Hen; Swine and Equine	70	70	100
Bovine; Hen and Equine	5	5	0
Bovine; Hen; Equine and Duck	0	10	0
Bovine; Hen and Swine	0	10	0
Bovine and Hen	10	0	0
Bovine; Hen; Swine; Equine and Quail	0	5	0
Bovine; Hen; Swine; Equine and Goose	5	0	0
Bovine	10	0	0
Relationship with Animals			
Source of income	25	0	0
Affective component	0	0	0
Income source and affective component	75	100	100
Most affectionate species			
Bovine	80	30	0
Bovine and Equine	15	15	0
Bovine and Hen	0	0	100
Bovine, Equine and Hen	0	5	0
Bovine, Hen and Swine	5	0	0
Bovine, Hen, Swine and Equine	0	45	0
Bovine, Hen, Quail and Equine	0	5	0
Reason for pluriactivity of animal production			
Increase in income and own consumption	75	20	100
affection for animals	10	5	0
Increase in income and affection	15	75	0

These results demonstrate the pluriactivity of the analyzed properties, which is extremely important in contemporary agriculture, a fact also observed by KAGEYAMA (2019), who reports that the average family income of pluriactive agricultural households is systematically higher than that of mono-active ones.Understanding the human/animal relationship is important in understanding studies focused on ethno-zootechnics, as this science studies the diversity of interactions that human cultures maintain with animals (MEDEIROS et al. 2020). This fact was also observed by REZENDE et al. (2021) who identified that human-animal relationships are subject to affection and utility. In this sense, 75; 100 and 100% of producers in groups 1; 2 and 3 responded that the type of relationship they have with livestock goes beyond being just a source of income, being also an affective relationship, and the animal creations that were most prominent in affective relationships were cattle, horses, swine and chickens.

Another characteristic that greatly represents the agricultural culture of cattle ranchers in Minas Gerais, representing the largest milk basin in the country (IBGE 2020) is the affinity for dairy cattle, which is a historical characteristic of the state. In this sense, we sought through the data (Tables 4, 5 and 6) the ethno-zootechnical relationships of the studied production units with dairy cattle and the production of milk derivatives.

Table 4. Obtaining and practice of naming the animals of the dairy activity.

Way of obtaining dairy animals	Group 1%	Group 2%	Group 3%
Auction	20	0	0
Purchase	25	15	0
Reproduction	50	55	0
All	5	30	100
Practice naming cows			
Yes	100	100	100
No	0	0	0
Reason for naming animals			
Cultural	30	0	0
Affection	5	0	0
Facilitates handling	65	100	100

Table 4 shows that there is a predominance of 50 and 55% of producers in groups 1 and 2 for obtaining dairy animals through reproductive activity within the property itself. Among these reasons we can highlight the cost of obtaining animals through reproductive practices is cheaper than the acquisition through purchase and/or auctions, however, the creation of a calf from its birth, strengthens and narrows the affection relationships (SCHREIBER et al. 2018).

When approaching producers about the exercise of naming animals (dairy cows), it is observed that they all use this practice, where 30 and 5% of the representatives of group 1 consider it a cultural and affective practice, respectively. However, most producers in all groups reported that this practice facilitates day-to-day management. KOSBY (2019) presents in her work that female ranchers understand that their cows are like social actresses, companions, endowed with intentions, and naming the cows reinforces this affective bond.

Results like this reinforce how ethno-zootechnics is important and relevant science, that needs to be further encouraged in the country. In Table 5, it can be seen that only the producer in group 3 does not have the practice of producing milk derivatives and that 50 and 65% of the producers in groups 1 and 2, respectively, produce some type of by-product with the milk produced in the unit production, with the production of cheeses, curd cheese and sweets as the ones that presented the highest frequency in the responses. It is important to note that in groups 1 and 2, where milk by-products are produced, 90% of the producers in both groups highlighted that the knowledge of the preparation of these by-products was transmitted to them by a family member, highlighting that the knowledge passed down from generation to generation was the main form of learning.The family succession of traditional knowledge was also observed by several authors (STROPASOLAS 2014 and REZENDE et al. 2021).

TORRALES (2019), observed that the patrimonialization of the way of making artisanal Minas cheese, translates a large number of representations, associated with different values and different forms of see the world and shows us that culture and heritage are polyvalent concepts, because express different criteria and interests, associated with different values and different ways of seeing the world.

Table 5. Milk by-products and importance of the generational transfer of knowledge of milk by-products.

Confection of by-products from the milk produced	Group 1%	Group 2%	Group 3%
Yes	50	65	0
No	50	35	100
Produced milk by-products			
Cheese	25	5	0
Cream cheese	0	0	0
Cheeses and sweets	15	50	0
Cheeses; cream cheese and sweets	10	10	0
I don't have any by-products	50	35	100
Generational transfer of knowledge (milk by-products)			
Yes, with a family member	90	90	0
Alone	10	10	0
No, through technical courses	0	0	0
Importance and preservation of knowledge			
Yes	100	95	0
No	0	0	0
Don't know how to inform	0	5	100
Pass on this knowledge			
Yes	100	95	0
No	0	0	0
Don't know how to inform	0	5	100

Table 6. Importance of ethnozootechny and the generational transfer of general management.

Ethnozootechny/traditional knowledge is important in science	Group 1%	Group 2%	Group 3%
Yes	95	100	0
No	5	0	100
The profession of rural producer is tradition			
Yes	95	90	100
No	5	10	0
Generational transfer of knowledge (general management)			
Yes, with a family member	90	90	100
Alone	0	10	0
No, through technical courses	10	0	0
Believes in the union of traditional and scientific knowledge can generate a new way of thinking			
Yes	100	100	100
No	0	0	0

When provoked about the importance and preservation of traditional knowledge, and if they are concerned about passing this knowledge on to their children and grandchildren, 100 and 95% of producers in groups 1 and 2 answered affirmatively to both questions. The importance of preserving traditional knowledge in cheese production is an important point in economic strengthening and permanence in the countryside (CRUZ et al. 2020) and way of life (CRUZ & MENASCHE 2012), in addition to the protection of Minas Gerais cultural heritage by the legal regulation of the production and sale of artisanal cheeses (FERREIRA & COSTA 2021).

Regarding ethnoscience (Table 6), only the producer in group 3 understands that traditional knowledge cannot help scientific knowledge, since 95 and 100% of the producers in groups 1 and 2 believe in this statement. AGANI et al. (2022) observed the use of endogenous knowledge in Benin Republic to improve milk production in cows. SANTOS (2014) shows that scientific and traditional knowledge can only be properly recognized from a dialogue between such knowledge, while CUNHA (2007) states that traditional

knowledge and scientific knowledge are different, however, the next step is to wonder what the bridges are between them. It is noticed that this discussion is still incipient, mainly in ethno-zootechnics, therefore, there must be more research to support future multidisciplinary discussions on the subject. According CANNARELLA & PICCIONI (2011) reports that almost paradoxically, the future of a modern agriculture seems to be linked also to a return to the past and to a re-appropriation of marginalized, ignored or lost traditions on the base of local cultural heritage and traditional knowledge.

It can be observed that a large part of the cerrado dairy farmers in the Northwest of Minas Gerais, believe that the rural producer profession is seen as a tradition, that the generational transfer of knowledge in the general management of the rural property is passed between generations and that the union of traditional knowledge with scientific knowledge can be beneficial in rural activity. ACOSTA MUÑOZ & ZORIA JAVA (2012) based on traditional indigenous knowledge about the uses and management of pests in the cassava agro-food chain highlights that through the preservation of this knowledge, intellectual property rights are preserved with emphasis on geographical indications and brand's collective, as possible adequate mechanisms to be used by indigenous producers for the protection of traditional knowledge associated with biodiversity.

Further perspectives

Ethnozootechnics is characterized as a field of knowledge crossing, where the importance of agribusiness within societies, its history and evolution, in addition to the relationships between man, animal and environment, are important cultural parameters for social, economic and environmental development. Based on this prerogative and corroborating with the rescue and valorization of traditional knowledge and its relationship with the culture of the people, this research aims to stimulate research in the area of Ethnozootechnics and the development of this science in Brazil.

CONCLUSION

It is concluded that part of the dairy farmers located in the cerrado biome, the Northwest region of Minas, the man/animal relationship is important, with traits of affection and utility, and that the transmission of traditional knowledge of the dairy activity is important, and that they believe that scientific and traditional knowledge can be beneficial in rural activity. It is verified in this present research, that more investment and interest are needed in this new field of knowledge: ethno-zootechnics.

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CONFLICT OF INTEREST

The authors declare that they haven’t any conflict of interest that may have influenced either the conduct or the presentation of the research.

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