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VERIFICATION OF HANDLING PRACTICES IN CATTLE AS A CRITERION FOR ASSOCIATION WITH ANIMAL WELFARE

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Abstract: The search for productivity allied to ethical issues and the demands of a more demanding and competitive market have directed efforts towards improvements in the level of animal welfare within the productive sector. The objective was to evaluate the impacts of animal management on the well-being of bovine herds, within the productive structure of the farms. Dichotomous questionnaires were developed focusing on sanitary, nutritional, reproductive and facilities management, relating these themes to animal welfare. The questionnaires were applied in 30 rural properties intended for the production of milk and beef in the region of the city of Chapadinha, from December 2021 to April 2022. It was found that attention to the production system goes beyond care for facilities, health, nutrition or animal reproduction, involving concern for the behavior, adaptation, physiological state and well-being of the animal. In general, the management and structural aspects of rural properties meet the basic needs of producers. However, a contribution is needed in terms of technical monitoring, animal environment, better structures for the animals, adequacy of management to the animal's ethological arsenal in order to obtain better production rates.

Keywords: Cattle breeding; animal handling; five freedoms.

INTRODUCTION

In terms of cattle breeding, the export of Brazilian meat is mainly destined for Asian countries and the European Union, its main importers, which demand strictness for the quality of the meat (ABIEC, 2017). However, despite the growth of the Brazilian animal production system in recent years, there has been an urgent need for adjustments and dissemination of animal welfare in the cattle production chain, since the benefits of human-

animal interaction have brought positive results. for animal productivity (KELLER et al., 2019). The adaptation of integrated animal welfare management is fundamental for food production, as they have a direct influence on production systems, minimizing the impacts of stress on product quality (DE SOUZA; GONÇALVES, 2017).

In this perspective, it is presumable to verify the intense relationship between stress, well-being, reproduction and animal production. Because well-being refers to the multiplicity of conditions in which the animal is subjected (MOTA; MARÇAL, 2019). In this sense, the use of biotechniques applied to animal reproduction plays an important role in the dissemination of high-quality genetic material, contributing to the increase in milk and meat production in the country (FIGUEIREDO E MOLENTO, 2008).

The well-being of breeders and matrices can be harmed by problems related to nutrition, environment, health, behavior and emotional states, interfering with reproductive indices, such as: sexual precocity, reproductive cyclicity, estrus expression, ovulations, production of viable sperm, etc. Well-being involves aspects related to the animal itself, the environmental conditions to which it is subjected and the combination of these factors. In such a way that offering the best diet and sanitary treatment does not guarantee that the animal has a high degree of well-being. For this reason, when assessing animal welfare, it is essential to pay attention to all these domains. (CARVALHAL AND COSTA, 2018).

To have these aspects as a starting point, it is essential to raise awareness and involve the entire productive sector in relation to ethical and economic issues. But even so, the growing progress of the sector runs parallel with intense reproductive management that interfere with reproductive efficiency and performance, reducing animal welfare (CARVALHAL E COSTA, 2018). The objective was to evaluate the impacts of animal management as a criterion for associating well-being in cattle, within the productive structure of farms.

MATERIAL AND METHODS

The study was approached using the deductive hypothetical method, developed by Popper (1935), which starts from the perception of a gap in knowledge from which hypotheses are formulated and the prediction of the occurrence of phenomena covered by the hypothesis is tested (MARCONI; LAKATOS, 2006).

The procedure method adopted was quantitative statistics, using appropriate basic descriptive statistics to identify relevant information about the facts and variables researched, allowing cross-referencing responses and verifying hypotheses, along with multivariate contingency analysis. In order to answer the question of the problem, a dichotomous questionnaire was developed aimed at sanitary, nutritional, reproductive and facilities management, relating these themes to animal welfare. The questionnaires were applied in 30 rural properties focused on the production of milk and beef in the city of Chapadinha, from December 2021 to April 2022.

The Microsoft Excel (2013) program was used to organize and plan the data found in the development of the work, favoring the subsequent interpretation of all questions, which were tabulated and analyzed through correspondence analysis, and the Chi-square statistical test to observe the qualitative variables of all categories.

RESULTS AND DISCUSSION

The use of suitable production facilities is essential to facilitate handling and provide the necessary comfort for the animal to exercise

its full genetic potential. Activities such as the use of screams, inadequate vaccination schedules and a corral without water points, lead to a higher stress peak in the animals, influencing the change in behavior.

In the analysis of figure 1, of multivariate contingency, a close relationship can be observed between confinement-type rearing systems, with the type of exploitation of animals for meat production, the availability of water in the corral, and the availability of shady areas.

In the analysis of animal welfare, several factors compete on the physiological aspect and performance of the animal, and facilities have a great impact on this. Agricultural facilities must be appropriate to not cause damage to the animal and ensure the well-being and safety of the employees responsible for handling the animals (MIRANDA; CARVALHO; THOMÉ, 2013).

Of the 30 properties studied, it was observed that in 54% of them the splinters and posts are free of nails and screws, however, 46% stated that the fences of the property were not free of sharp perforations, which can lead to losses in the quality of the property. meat and economic losses, due to direct contact with poorly finished fences. According to Miranda, Carvalho and Thomé (2013), carcass quality has been valued by slaughterhouses, thus good genetic potential, good care related to the unusual application of medication, skin and carcasses free of bruises and imperfections have provided producers with greater economic growth.

As for the availability of water points and shading in the corral, in 59% of the properties it was observed to have water points in the corral, in 85% it was verified to have shading points, and in 33% the presence of covered trunk was examined in the corral. However, in most properties, the movement of animals over long distances in search of access to water, which is generally of low quality, and to shady areas, tends to affect animal development, leading to a longer growth time until slaughter, the which results in high animal consumption after the finishing phase, causing losses to producers.

The imbalance in animal homeostasis produces alterations in the communication of the nervous system with the endocrine system, through the chemistry between the tissues, leading to oscillation in hormone levels and impairment in the endocrine response, favoring the increase in the activity of the adrenal cortex due to the maximum stimulation of the adrenal cortex. hypothalamic-pituitary-adrenal axis, which generates stress discharge on the productive and reproductive capacity of these animals (SCHIMIDTNIELSEN, 2002).

The alteration in the hypothalamic-pituitary-adrenal axis can be triggered by factors internal and external to the animal, such as inadequacies in rural facilities, however the results will always be similar, with the discharge in cortisol levels the effect will be the installation of the stress situation animal. Modulation on this axis for the stress aspect involves endocrine changes. Cortisol secretion is a metabolic marker of stress. The violent increase in the production of this hormone triggers a change in cellular glucose consumption, however the long-term progressive stimulus in the production of cortisol seems to be more severe, as it negatively interferes with growth, reproduction and animal production (SCHIMIDT-NIELSEN, 2002).

In this study, it was also observed that in 89% of the properties there is a concern to vaccinate their animals at the coolest times of the day, which guarantees peaceful handling and less stress caused by the effect of daily temperature.

The stress caused to the animal during handling causes significant losses for the producer. And although there is no ready recipe for handling cattle, some actions during activities with them must be taken into account, such as eliminating aggressive behavior, screaming, and the use of dogs (ZAPIOLA, 2006).

According to figure 2, the use of dogs for management was not observed in 65% of the properties studied. Regarding the use of screams, 59% answered that they do not use them, highlighting the ease of dealing with their own herd. It must also be noted that 89% of rural properties do not use bells.

The relations of sanitary management compliance with Well-Being can be seen in Figure 3, studied through hygiene procedures and needle exchanges in practices aimed at vaccination, vermifugation and application of drugs. Still according to the figure, it is verified that there is agreement in the sanitary management practices regarding vaccination, because in the properties that carry out hygiene in the handling of needles, they also respect the grace period of vaccines.

In order to obtain the best performance of the creation, with regard to sanitary control, not only the compulsory measures, regulated by the Ministry of Agriculture, Livestock and Food Supply (Mapa), must be considered, but also a careful sanitary management program, which must be planned with the technical guidance of a veterinarian, to meet the requirements of the production system in question (SOUZA, 2013).

In this study, a relationship was observed between the properties that perform the sterilization, exchange and decontamination of needles, in addition to respecting the vaccine withdrawal period, showing that there are good hygiene practices in that region, regardless of the size of the property and type of technology. Sanitary management practices are important to prevent and control contamination, preventing the development of microorganisms and pathologies such as mastitis, brucellosis, babesiosis and others. In addition, the length of the withdrawal period is essential with regard to the quality of the meat, which can quickly deteriorate as well as compromise the health of the consumer.

As for the percentage, most rural properties are concerned with sanitary issues, with 93% referring to properties that sterilize needles, 85% change vaccine needles for a certain number of animals, and about 67% decontaminate needles with alcohol at each change of animal. Freitas (2012) reported in his work the importance of veterinary vaccines and the use of joint activities of environmental sanitation, health education and epidemiological surveillance that efficiently control diseases in the herd. He also emphasized the possibility of the herd not becoming immune even after vaccination, a factor that may be motivated by errors in vaccination management such as cleaning, storage of vaccines and handling of animals.

Cleaning during the vaccination phases, changing needles and sterilizing prevent local infections and herd contamination. The use of sanitary management practices reflects on the herds in the region, since most owners reported that there was no occurrence of diseases such as neosporosis, bovine viral diarrhea (BVD), brucellosis, mastitis or parasitic diseases.

When defining the health management of the herd, the first thing to remember is vaccination. The physical structure of the farm area (trunks and chutes) must be in adequate conditions for the movement and containment of the animals. Ideally, handling must be done silently and with as little noise as possible, thus reducing the animal's stress.

The ideal location recommendation for vaccine applications is on the neck plate or behind the shoulder blade, where sagging

skin can be easily pulled off. 100% of owners expressed an understanding of where and how vaccines are administered and 100% placed their animals in containment for vaccinations. In the properties, it is important that the handlers of the animals have training to have a good quality in the insertion of management practices. Therefore, it is necessary to define who is responsible for monitoring the animals, as well as their conditions and what must be done on a daily basis to identify detailed structural and management points. In addition, the individual follow-up of the state of the animals, both sanitary and physical (BROM and MOLENTO, 2004).

The grace period, that is, the period that the producer must comply with in order to be able to slaughter the animal, becomes important due to the fact of having a good quality of the meat as well as minimizing economic losses. Taking into account the commitment to the health of the consumer who are the future targets in terms of consumption (NETO et.al 2013).

It was observed that 81% of the properties did not have technical monitoring (figure 4), which makes it difficult to better and correctly manage the animals. As well as the guidelines that become scarce and would be of extreme necessity for the decision making of the producers. - "We miss someone to guide us on some issues that we are in doubt" -, said one of the owners. 81% of producers also answered no, regarding keeping vaccination records up to date, as well as recording when medication is used in their herd. Showing that it is a problem for the health of the herd that, according to them, they remembered "head" when such a procedure was performed on the animal. When it comes to the grace period, 93% confirmed respect for the period, a positive point because during the questioning they demonstrated that they knew the need and respected it despite little knowledge on the subject.

In figure 5 the use of pastures shows the relationship between intercropping of grasses and pasture diversification. In addition to the connection between landowners who do not use intercropping and do not use pasture diversification.

Figure 6 shows the percentage that highlights the characteristics of the Chapadinha region, where 59% of the interviewed landowners did not use correctives or fertilizers, around 59% used pasture diversification, and 52% of the landowners stated that they intercropped grasses with legumes. According to Paulino et al. (2004) animal production on pasture is the result of the efficiency of three methods: forage production, forage consumption by animals and conversion of forage into animal product (animal performance), and when there is an imbalance in any of these three methods, there is losses in animal production income.

Taking this into account, it was observed that in the region there is a lack of technology for the production of forage, which directly reflects on the nutritional conditions of the herd. As the region is located in the Savanna biome and in its majority, in an extensive system, the environmental conditions and the lack of investments in technologies aimed at the soil and pasture as correctives/fertilizers, harm the growth of forage plants. Normally, the native pastures of the region are located in areas degraded by local agriculture that use pesticides, in addition to the fact that the area itself has low natural fertility due to the biome.

In the dry, dry and cold period, the pastures have less nutrients than in the rainy period, therefore, the seriousness of stocking food supplements so that at that time the herd continues to gain weight. About 81% of the

producers interviewed stated that the stocks of food supplements are sufficient for their animals throughout the year, on the other hand, 96% reported that they do not receive guidance from a specialized technician to formulate these supplements, which is a question, because, a balanced diet meets the nutritional requirements of the animal and improves its productive capacity, reflecting on economic competence (FILHO, et al. 2009).

Of the properties studied, 67% carried out the control of invasive plants, and 56% of the properties did not have signs of degradation or index of invasive plants. The presence of weeds in pastures is one of the main factors responsible for the low productivity of Brazilian pastures. Both these invasive and forage plants require water, light and nutrients for their development and generally adapt to their environment through natural selection. In addition, weeds reduce forage quality and, when consumed, can cause intoxication, resulting in morbidity or even mortality in animals (PEREIRA et al., 2006).

In recent years, interest and need for reliable and up-to-date information on land use and land cover has increased, with numerous local, national and international projects aimed at creating and updating databases. of land use and cover (BORRAS et al., 2017).

The use of the soil is important to obtain good results, but the properties under study showed that 81% did not use a map, even though it is very helpful to use it for better observation and application of innovative techniques, because handling the soil is a socioeconomic criterion.

Figure 7 shows the connection between the non-use of hormonal protocols, reproductive biotechnologies and breeding season, showing that most properties did not use reproductive management practices.

According to figure 8, only 21% of rural properties carried out a breeding season, about 96% did not use reproductive biotechnologies such as artificial insemination, embryo transfer or in vitro embryo production, this percentage is still repeated in the questions: " Do you use any hormonal protocol to increase the reproductive rates of the animals?", "Are females destined for early reproduction?", and "Is semen collected by electroejaculation done?", which showed that there are no usual reproductive management practices in the region.

According to Marques et al. (2014), in reproductive management it is necessary that there is understanding and experience of the producer and the technician about the ambience, the type of animal, the health and the disposition of natural, technical and financial resources, indispensable for the introduction of the management aiming at a good efficiency reproductive.

When analyzing the data obtained and the field experience in that region, it was observed that most of them are from small properties that do not have technical instructional support on reproductive management, this factor being caused by lack of information or even lack of technical means and financial, which directly reflects on the efficiency of the herd, which generally have a history of only one calving per cow every 24 months or more.

In this study, in 78% of the rural properties no abortion was observed, in 85% the occurrence of fever in the animals was not verified. And finally, when it comes to metritis or retained placenta, 93% said that there was no case on their properties.

In many rural properties, reproductive cases such as: abortion, retention of fetal envelopes, or metabolic disorders have greatly harmed the herd, often resulting from failures in reproductive, sanitary and feeding management, generating occasional reproductive losses, more especially efficiency losses. long-term reproduction.

These disorders conflict with the good performance of the animal, as the pathological state challenges the animal's physiology, causing temporary or permanent damage. Abortion in cattle characterized by the expulsion of a live or dead fetus between 42 days and up to 280 days of gestation approximately, generates, in addition to damage to animal health, economic expenditure, as it may even make the animal unable to become pregnant again, depending on the cause (HUBBERT et al., 1971).

In the condition of retention of the fetal envelopes, the placenta is considered an important material for diagnosis, due to the possibilities of alterations that can be specifically diagnosed through its analysis. Thus, in the retention of the placenta, the result of the failure in the separation of the cotyledons from the caruncles, makes the placentomes an ideal environment for the investigation of contaminating agents (FERNANDES, 1998).

The repetition of estrus in bovine females is a very common reproductive problem in this species and can occur due to several factors such as infectious agents, excess heat, water restriction and even excess protein in the diets (FERNANDES, 1998).

In the properties under study, 30% stated that they observed the repetition of estrus, 11% reported that the females had mastitis and 22% reported the occurrence of hypocalcemia in the last 12 months.

Although reproductive diseases have a low mortality, they have a negative effect on the reproductive efficiency of herds and consequently on animal production, but above all on the condition of health and maintenance of animal welfare (SANTOS, 2016). Understanding the nutritional and health problems that affect reproduction is of paramount importance to maintaining the health of the animal and maintaining the financial balance of the property.

Reproduction is of fundamental importance for the animal production system, as an aspect of propagation between species, but as a marker of the organism's immunological efficiency, emphasizing that the animal will generally only reproduce when there are favorable conditions, which impact externally, more mainly internally, affecting above all the modulation of cellular functions. Thus, markers of reproductive capacity and animal performance, such as reproductive behavior, prolificacy, assessment of the breeder's body condition and maternal ability, can be considered to assess the adaptive capacity of the animal to the environment (FAÇANHA et al., 2013).

CONCLUSION

It was verified that the attention with the productive system goes beyond the care with the installations, health, nutrition or animal reproduction, involving the concern with the behavior, adaptation, physiological state and the well-being of the animal. In general, the management and structural aspects of rural properties meet the basic needs of producers. However, a contribution is needed in terms of technical monitoring, animal environment, better structures for the animals, adequacy of management to the animal's ethological arsenal in order to obtain better production rates.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

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FIGURES

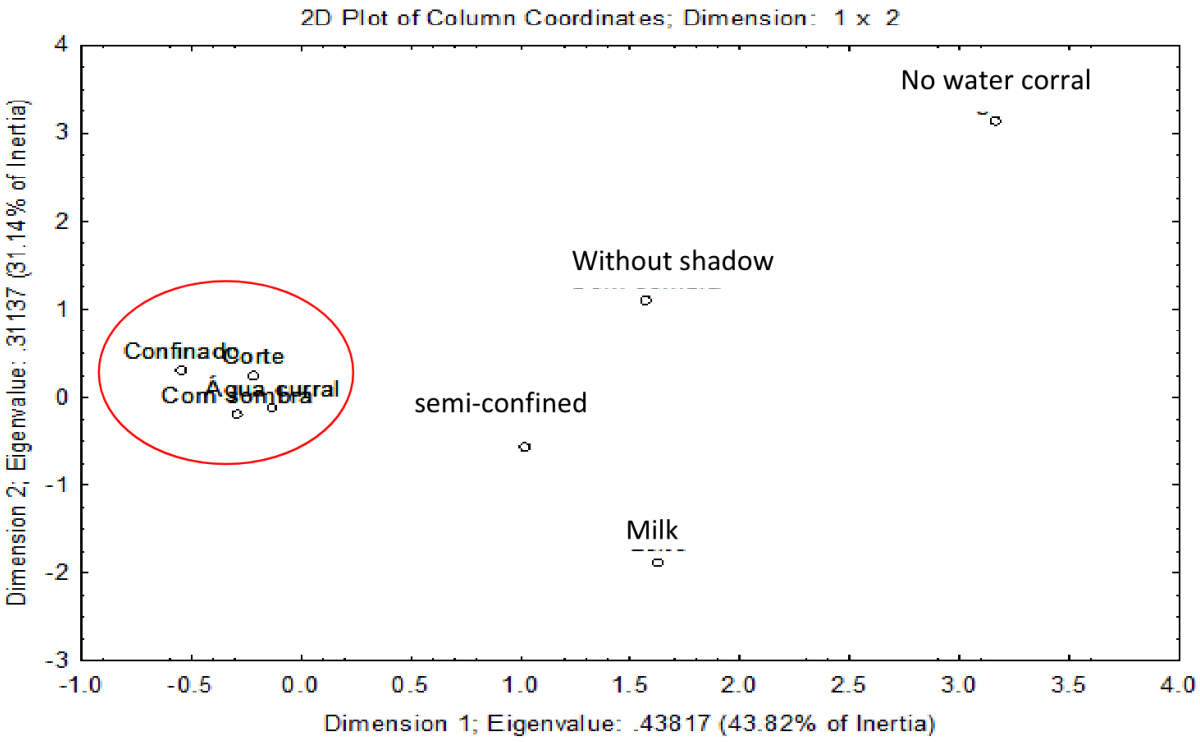

Figure 1. Contingency Chart relating to general aspects, in rural properties in the municipality of Chapadinha-MA (Source: Author).

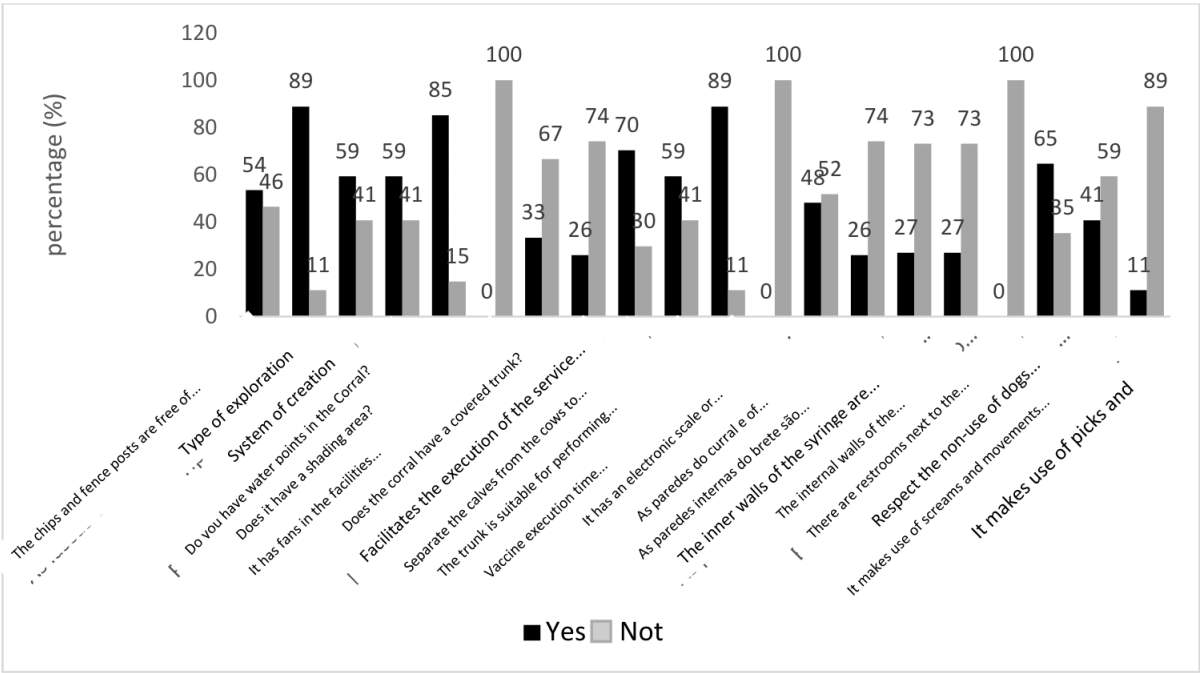

Figure 2. Procedures referring to general aspects in rural properties in the municipality of Chapadinha-MA (Source: Author).

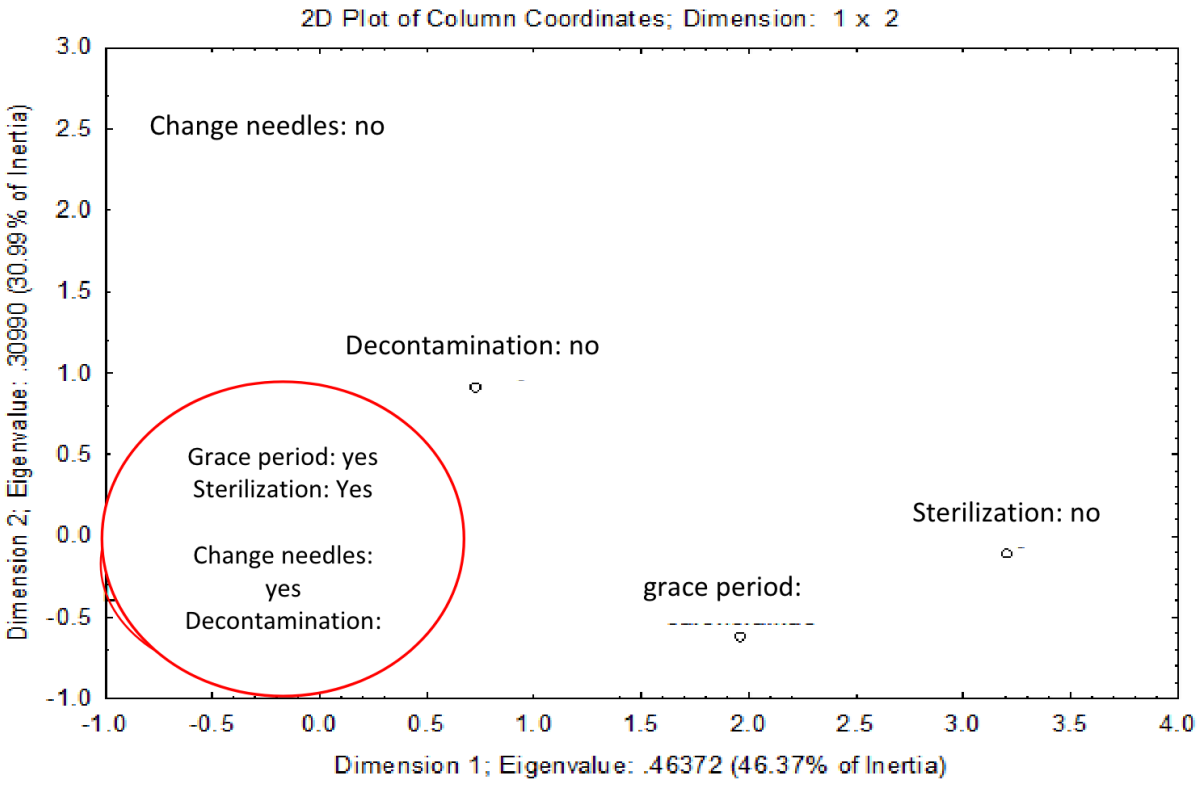

Figure 3. Contingency Chart related to sanitary management, in rural properties in the municipality of Chapadinha-MA (Source: Author)

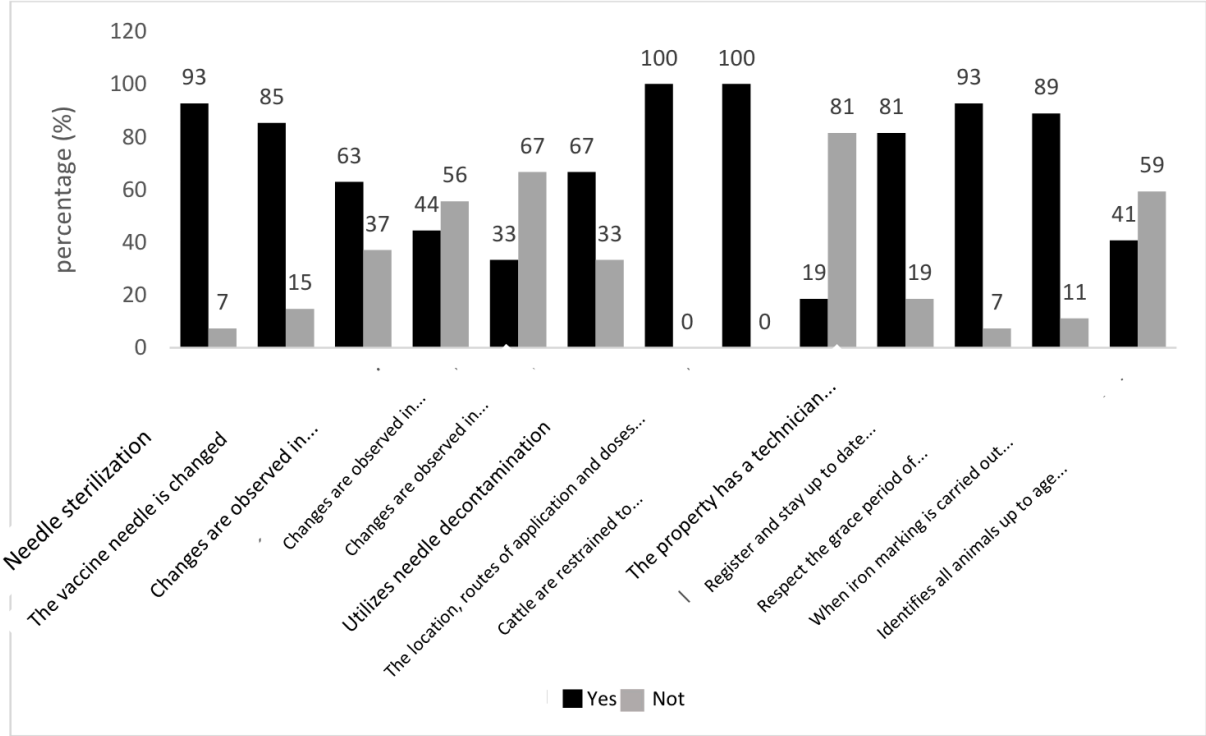

Figure 4. Procedures related to sanitary management carried out on rural properties in the municipality of Chapadinha-MA (Source: Author).

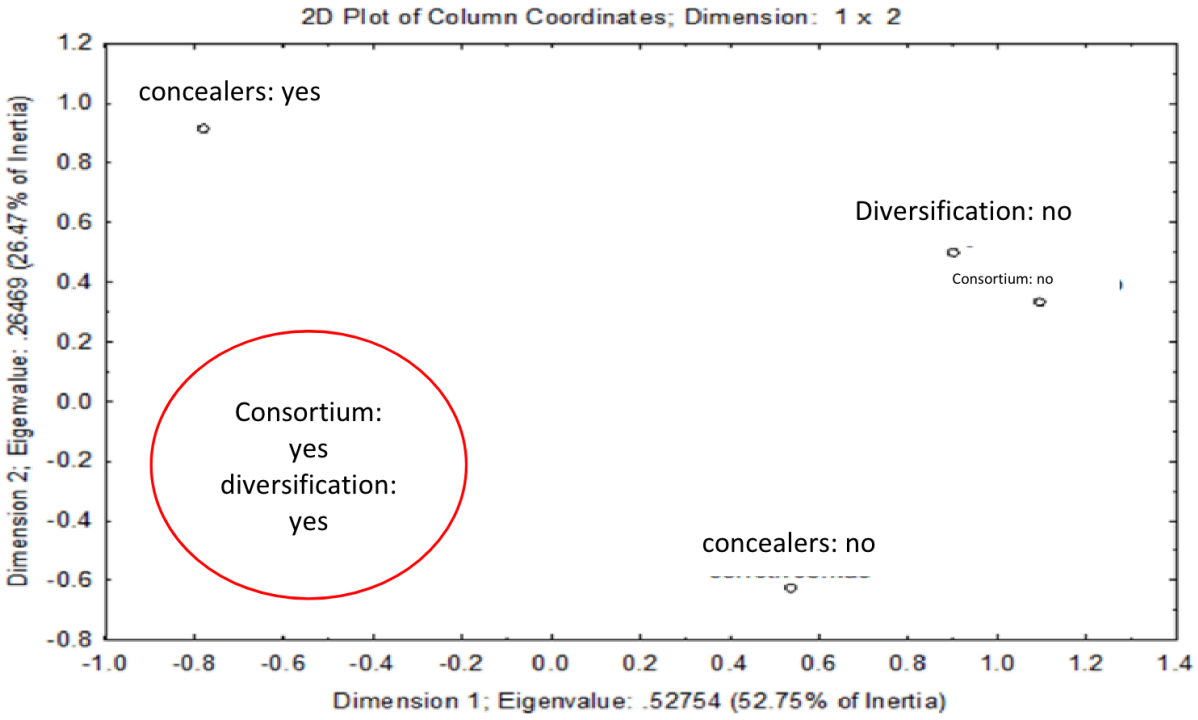

Figure 5. Contingency Chart related to the nutrition aspect, in rural properties in the municipality of Chapadinha-MA (Source: Author).

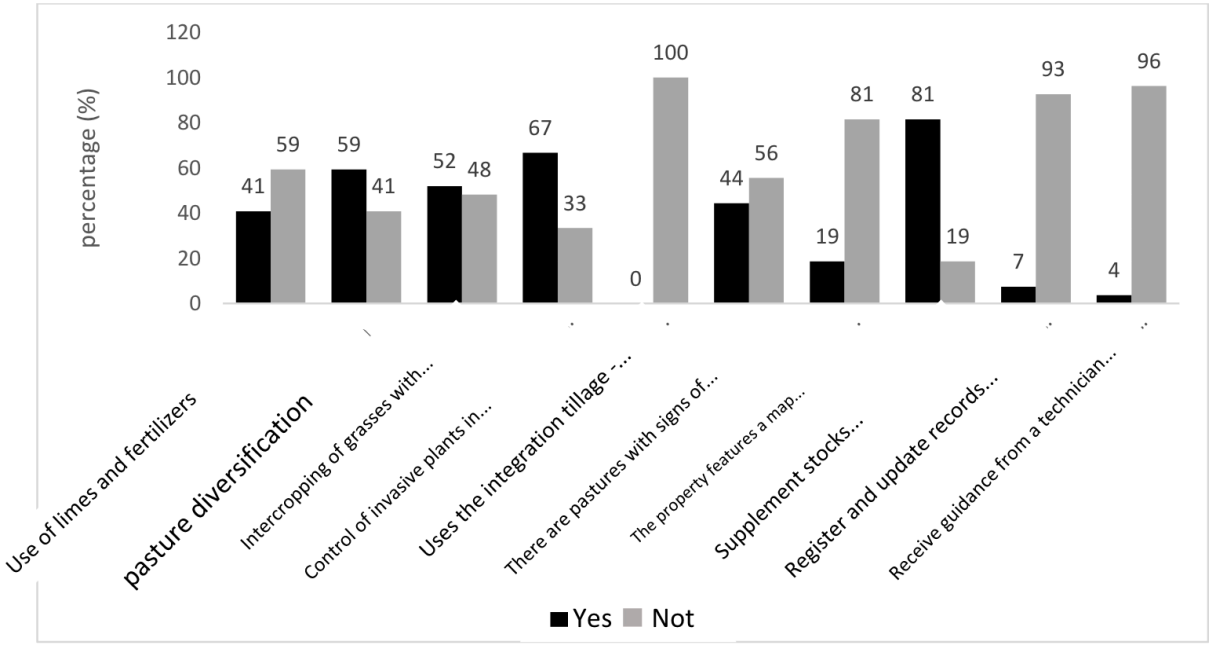

Figure 6. Procedures related to nutritional management carried out on rural properties in the municipality of Chapadinha-MA (Source: Author).

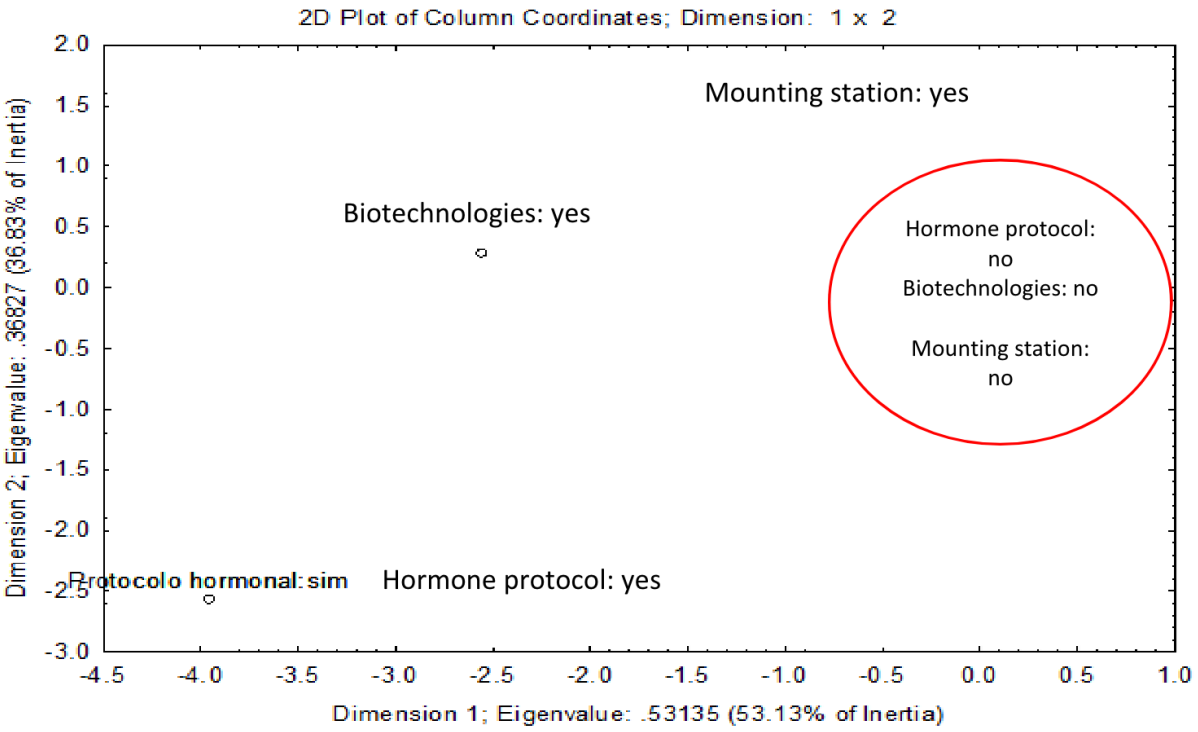

Figure 7. Contingency Chart related to reproductive management in rural properties in the municipality of Chapadinha-MA (Source: Author).

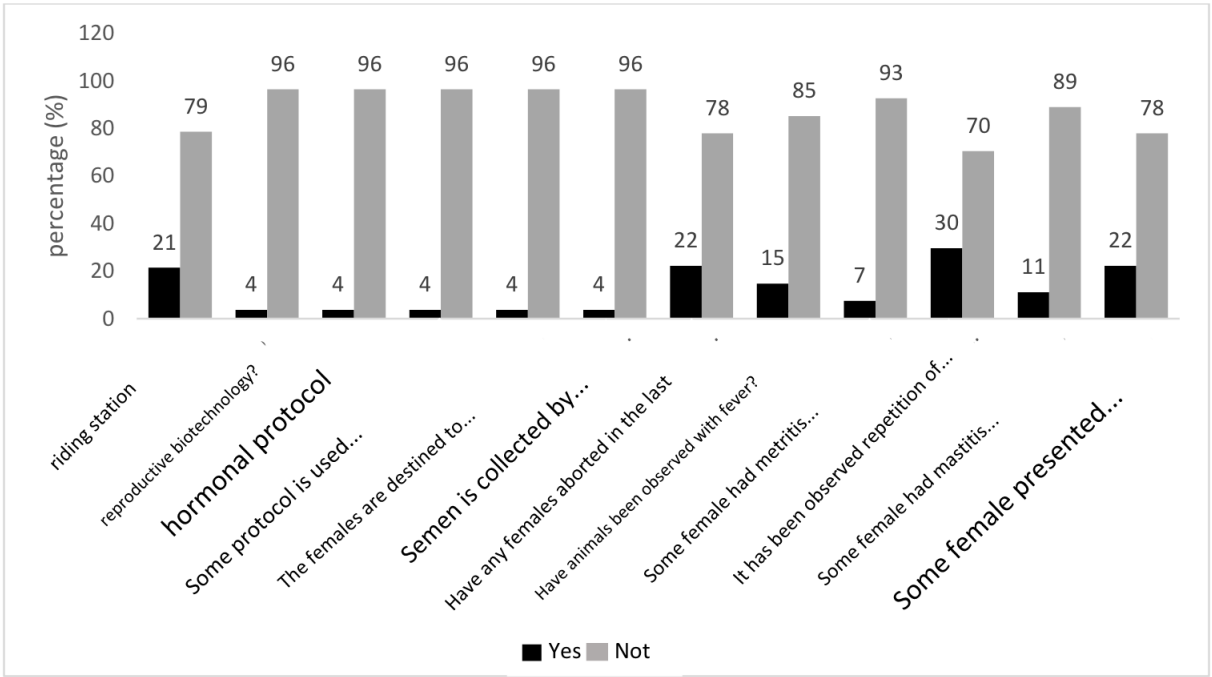

Figure 8. Procedures related to reproductive management carried out on rural properties in the municipality of Chapadinha-MA. (Source: Author).