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# FIELD DAY ON AGRONOMIC AND ZOOTECHNICAL TECHNOLOGIES TO FARMERS IN THE SEMI-ARID REGION OF NORTHERN MINAS GERAIS

# DIA DE CAMPO SOBRE TECNOLOGIAS AGRONÔMICAS E ZOOTÉCNICAS À AGRICULTORES NA REGIÃO SEMIÁRIDA DO NORTE DE MINAS GERAIS

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**ABSTRACT:** The field day is a strategy that can be used to disseminate technologies generated in the Research Centers, and exchange experiences with rural producers. Based on the above, the objective was to guide, and encourage agricultural producers in the municipality of Verdelândia through the use of the Field day in the strategic use of technologies in order to improve milk, and/or meat production throughout the year. The Field day was held at Agropecuária Boa Sorte located in the municipality of Verdelândia, a semiarid region in North of Minas. The Field day was developed through technical lectures on management, production, and use of silage for ruminants; Genetic improvement of cattle for milk yield with emphasis on the semiarid region; implantation, management, and use of forage palm and BRS capiaçu grass for cattle; supplementation strategies for dairy cattle; management, and use of vaccines in cattle. There was 93 producers participated in the field day, the majority of which belonged to the municipality of Verdelândia. There was a demand for more field days with lectures and guidance from rural producers. The reception of this rural extension had a positive impact on regional productivity. The importance of the continuity of lectures, and technical guidance to producers in the semi-arid region of Northern Minas Gerais is detected.

**KEYWORDS:** farmers, silage, forage palm, BRS capiaçu grass, Verdelândia

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**RESUMO:** O dia de campo é uma estratégia que pode ser utilizada para difundir tecnologias geradas nos Centros de Pesquisas e trocar experiências com os produtores rurais. Com base no exposto, objetivou-se por meio da prática do dia de campo orientar e incentivar produtores agropecuaristas da região semiárida quanto ao uso de tecnologias de forma estratégica visando à melhoria da produção de leite e/ou carne ao longo do ano. O dia de campo foi realizado na Agropecuária Boa Sorte localizada no município de Verdelândia, região semiárida do Norte de Minas. O dia de campo foi desenvolvido por meio de palestras técnicas sobre manejo, produção e utilização de silagem para ruminantes; Melhoramento genético de bovinos para produção de leite com ênfase na região semiárida; implantação, manejo e utilização de palma forrageira e BRS capiaçu para bovinos; estratégias de suplementação de bovinos de leite; manejo e utilização de vacinas em bovinos. Houve participação de 93 produtores no dia de campo, sendo a maioria pertencente ao município de Verdelândia. De imediato verificou-se a demanda por mais Dias de campo com a realização de palestras e orientações por parte dos produtores rurais. A recepção dessa extensão rural foi positiva de impacto na produtividade regional. Detecta-se a importância da continuidade das palestras e orientações a técnicas aos produtores da região semiárida do Norte de Minas Gerais.

**PALAVRAS-CHAVES:** Produtor rural, silagem, palma, BRS capiaçu, Verdelândia

## INTRODUCTION

The production of ruminants in Brazil is based on the use of forage plants as the main source of nutrients for the maintenance, production, and reproduction of animals. There are 162.53 million hectares of native or cultivated pastures for the management of 213.68 million cattle (Abiec, 2020). However, forage production is not constant over the year due to the seasonality of forages caused by climatic variations. This behavior in forage production in Central Brazil has been elucidated since its discovery, and rural producers have been focusing on forage conservation as strategy to maintain and/or increase animal production throughout the year (Monção et al., 2019b).

At Brazilian Universities, various ways to conserve the forage production surplus during the rainy season are discussed, and researched, to be used in the time of pasture shortage that normally occurs in the winter climate season.

In the semiarid climate region of Brazil, which covers an area of 928,56 thousand km², which is about 11% of the national territory (Ferreira et al., 2009), the effects of drought are more impactful than in tropical regions, climate the one that predominates in the country. Furthermore to the dry period that lasts for at least six months in the semiarid region, the veranic has been increasing for three years (Monção et al., 2020b). This veranic of 20 to 60 days in the semi-arid region of Northern Minas Gerais has prevented the production of not only grains for

animal and human feed, however forage for animals. In this sense, many Universities and private institutions located in this region have focused on research with forage and animals adapted to water stress conditions, and adverse climatic conditions, respectively.

Although there is an increasing number of rural producers with access to the internet and other technologies, it is clear that there are still gaps in animal and plant production due to the lack of technical monitoring, and the vast amount of information on the internet, making it sometimes confusing the understanding. On the other hand, many rural producers do not have access to internet, and technical assistance. The problem in general is that the rural producer in the semiarid region still lacks management information in general for rural properties (Monção et al., 2019).

The field day is a strategy widely used to disseminate technologies generated in the Research Centers, and exchange experiences with rural producers (Menegat et al., 2019; Barbosa et al., 2020). However, in the city of Verdelândia located in the north of the state of Minas Gerais, this practice of rural and University extension through the field day is still scarce and unknown by rural producers, especially small farmers. Usually, the guidelines for producers take place in agricultural stores or specialized government agencies, however, possibly due to the territorial extension, there is a lack of technical monitoring at the field level of those involved with feed production.

Based on the above, the objective was to guide and encourage agricultural producers in the semi-arid region of northern Minas Gerais regarding the use of technologies in a strategic way aiming at improving milk and/or meat production over the course of the field day. The field day is an important moment for producers and technicians because there is exchange and improvement of knowledge. Moreover, the occasion allows for the interaction of those involved mainly with regard to the University-Field, formerly distant at times.

## MATERIAL AND METHODS

The field day was conducted at Boa Sorte farm localized in Verdelândia (15°37'04.1 "S and 43°36'13.4" W) semiarid region. The climate of the region, according to the Thornthwaite classification, is of the BSh type, with summer rains and well-defined dry periods in winter. The average annual rainfall is less than 800 mm, with an average annual temperature



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of 27 °C. The climate is tropical mesothermal, almost megathermic, due to the altitude, sub-humid and semi-arid, with irregular rains, causing long periods of drought.

The actions carried out during the field day for producers were carried out in November 2020 after previous survey of activities and needs routinely occurred in local rural properties (i.e., silage production, management of weeds and forage palm for ruminants and genetic improvement). The event was held with the authorization of the local city Hall, which also provided a medical team to monitor those involved regarding the use of masks, body distance between individuals, body temperature and the use of alcohol gel. This procedure was necessary because the event occurred during the corona virus pandemic.

The field day was developed through technical lectures on management, production and use of silage for ruminants; Genetic improvement of cattle for milk production with emphasis on the semiarid region; implantation, management and use of forage palm and BRS capiaçu for cattle; supplementation strategies for dairy cattle; management and use of vaccines in cattle.

In the northern region of Minas Gerais, dairy cattle is growing more and more due to the shorter return on investment capital. In addition, the development of cheese makers has boosted the milk market in the region, which has contributed to reducing the rural exodus. In addition to the technical lectures, companies from the region attended presentations of agricultural machinery, veterinary products and animal nutrition.

During the meetings, banners and folders were used, among other resources to transmit information to producers. All didactic material and for use in the field, such as seeds, among others, were purchased through local stores and aid from programs/projects developed by Unimontes/Janaúba and partner institutions such as the municipal agriculture and livestock secretariats together with Senar Minas.

The lectures were disseminated through verbal contact with storeowners in the region, posters and the distribution of folders in strategic locations by the municipal agriculture and livestock secretariat, and Senar Minas.

## RESULTS AND DISCUSSION

Initially, some producers resisted participating in the field day and the reasons are different. One of them is believed to be inexperience with these events and/or perhaps because



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he does not believe in this extension link between the University and the rural environment. Others did not participate due to the pandemic and involvement in the farm's everyday activities, especially when it comes to dairy farmers.

However, there was participation of 93 producers of various municipalities as Jaíba, Janaúba, Porteirinha, Mato Verde, Espinosa and Verdun, with most belonging to this city. The extension actions through the field day at Agropecuária Boa Sorte served many rural producers in the semiarid region because agriculture is increasingly connected to social media. Immediately there was a demand for more field days with lectures and guidance from rural producers. The reception of this rural extension had a positive impact on the regional productivity of the municipalities involved. In addition to receiving guidance from the various technicians involved, the producers claimed that they were able to plan for the purchase of inputs, medicines and agricultural machinery, a unique opportunity exposed on the day of the event. Other producers reported that the field day proportioned their contact with owners and representatives of dairy products in the region, which was important in the marketing of individual of milk and community.

In the semi-arid region of Northern Minas, the main limitation of milk and meat production systems is the quantitative and qualitative supply of roughage. In practice, bufel grass (*Cenchrus ciliaris*) and current grass (*Urochloa mosambicensis* (Hanck). Dandy) and Andropogon grass (*Andropogon gayanus* Kunth) are the most cultivated, however, the forage mass conserved for the dry period these forages alone are not always sufficient for the quantity of animals (Monção et al., 2019ab, 2020 ab).

Working with forage species that are able to produce in the semiarid region, resistant to drought, is the greatest interest and challenge for producers. As a result, the extension actions presented on the field day emphasized the production of silage for ruminants. During the lecture, the importance of soil analysis for the implantation and management of silage crops was discussed, as an example, tropical grasses, sorghum, corn and millet. In addition, the ideal harvest time for different forages was addressed, as well as the steps (i.e., cutting, silo filling, compaction, sealing) involved in the ensiling process. A topic that was well explored in the lecture was the use of bacterial-enzymatic inoculants during grass ensiling. Many producers expressed doubts about the choice, form of use and the importance of this technology in the conservation of forage.

In the lecture on genetic improvement of dairy cattle, the techniques for selecting and crossing the matrices for the evolution of the herd were discussed. The importance of the selection of dairy matrices tolerant to thermal stress was very emphasized and in this sense the F1 Holstein x Zebu animals for the semi-arid region stood out. Holstein x Zebu crossbred cattle combine the productivity of milk from the Holstein breed with the rusticity and adaptation of Zebu to tropical and/or semi-arid climatic conditions in Brazil. Several studies carried out at the State University of Montes Claros (Unimontes) prove the productive efficiency of this animal in the semiarid region of the North of Minas (Santana et al., 2019, 2020; Rabelo et al., 2020; Ramos et al., 2021; Rigueira et al., 2021).

The handling and use of forage palm (*Opuntia* and *Nopalea*) and BRS capiaçu grass also gained prominence on the field day. The forage palm is one of the few forages in the semiarid region that can produce up to 250 t/ha of green mass in hostile humidity environments, and this has aroused the interest of many milk producers in the region on the technical guidelines for this crop. The forage palm, under rainfed conditions, produces 12 to 25 t/ha of dry mass, with an average of 65% non-fibrous carbohydrates and 60% of total digestible nutrients (Ferreira et al. 2012). It is a feed rich in energy and water for animals that are in production in regions whose availability of water, in some places, is quite limited. In addition, with the high cost of acquisition of the inputs traditionally used in the formulation of diets for ruminants, the energy content of the palm has been a great ally to the producer in reducing animal feed costs. This is because ingredients such as corn that are not produced on a large scale in these regions have a high share in the feed cost. The semiarid region of the North of Minas has high potential as a wide territorial extension for growth when it comes to the production of feeds derived from milk.

The quality of the cheeses produced in the cities of the semi-arid region of the North of Minas Gerais is known internationally (Costa et al., 2020). However, in the region as a whole, the average productivity of crossbred Holstein / Zebu cows, which are responsible for more than 80% of the volume of milk produced, is below the national mean. This is mainly explained by the unbalanced diets of most of these animals, especially in the dry period of the year, which highlights the importance of cultivating forages with high production potential of mass for roughage supplementation for animals (Monção et al., 2019ab, 2020 ab).

According to Monção et al., (2019, 2020), BRS capiaçu has the potential to produce up to 72 tons (irrigated in winter) of dry matter per hectare per year in the North of Minas



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region, with good nutritional value. This grass is of great importance in the growth, mainly of dairy farming in Brazil. However, when handling between 90 to 120 days for silage, the low energy content is limiting. In this sense, the use of forage palm together with urea and/or other protein and mineral sources associated with BRS capiaçu grass in the formulation of diets for F1 Holstein x Zebu cows has been an alternative for maintaining the producer in dairy farming. Another forage approached on the field day was the use of biomass sorghum (mean productivity of 29.70 t/ha in the semiarid region; Ramos et al., 2021) in the formulation of diets for dairy cows. Researches were conducted at Unimontes and found favorable results for the use of biomass sorghum for silage production (Queiroz et al., 2021) and use in the diet of lactating cows (Ramos et al., 2021). In general, animal feed planning on many farms in Brazil is still deficient and the consequences are the qualitative and quantitative feed restriction of animals and low productivity. Adapted forages should be selected with the purpose of supplying the animals' nutritional deficit and maintaining or better animal production throughout the year.

## CONCLUSION

The importance of disseminating technologies developed in study and research centers for rural producers is detected, where, through the field day, the aim is to increase regional animal/vegetable production. Also, improving the quality of life in rural areas and the source of income for those involved.

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