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Profile of hillbilly pork producers and consumers from Alto São Francisco region of Minas Gerais state

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Abstract
Small rural properties are common in the interior of the state of Minas Gerais, making the production of animals in a rustic system expressive, such as the raising of swine in an extensive or semi-extensive system. The objective was to evaluate the profile of producers and consumers of redneck swine in the Alto São Francisco Region - MG. The research was carried out in the municipality of Bambuí - MG, located in the center west of Minas Gerais. Participated in the questionnaire 16 rural producers in the region of Bambuí and 40 Bambuí residents approached at the open-air market who agreed to participate in the research. A questionnaire containing 21 questions was used, consisting of 17 open questions and 4 multiple-choice closed questions. Data analysis was carried out with the help of spreadsheets in Microsoft Office Excel® 2019. The lack of technical assistance and the dissemination of products through marketing are the main factors that negatively influence the growth of the activity. The analysis of the data obtained allows us to affirm that it is necessary to promote and structure the rustic pig farming, where 70% of the producers are unaware of the subject. 50% of the producers say they do not have technical assistance due to the price and difficulty of access to the properties, which would otherwise favor the best production and commercial rates in alternative systems. Consumers point out that pig's meat is purchased through the local fair (50%), where the price and origin of the products are the most relevant factors at the time of purchase and 90% of consumers believe that pork can be a vector for disease transmission.
Keywords: consumer market; quality; requirement; well-being.

Perfil dos produtores e consumidores de carne de suíno caipira na região do Alto São Francisco – MG

Resumo
Pequenas propriedades rurais são comuns em regiões do interior do estado de Minas Gerais, tornando expressivo a produção de animais em sistema caipira, como a criação de suínos em sistema extensivo ou semi-extensivo. Objetivou-se avaliar o perfil dos produtores e consumidores de suínos caipira da Região do Alto São Francisco – MG. A pesquisa foi realizada no município de Bambuí – MG, situado no centro oeste mineiro. Participaram do questionário 16 produtores rurais da região de Bambuí e 40 bambuienses abordados na feira-livre que aceitaram participar da pesquisa. Foi utilizado questionário contendo 21 questões, sendo composto por 17 questões abertas e 4 questões fechadas de múltipla escolha. A análise dos dados foi realizada com o auxílio de planilhas eletrônicas no Microsoft Office Excel® 2019. A falta de assistência técnica e a divulgação dos produtos por meio *marketing* são os principais fatores que influem negativamente

sobre o crescimento da atividade. A análise de dados obtidos, permitem afirmar, que é necessário realizar divulgação e estruturar a suinocultura caipira, onde 70% dos produtores desconhecem o tema. 50% dos produtores afirma não possuir assistência técnica devido ao preço e dificuldade de acesso nas propriedades, o que de forma contrário iria favorecer os melhores índices produtivos e comerciais nos sistemas alternativos. Os consumidores apontam que a carne suína consumida é adquirida por meio da feira local (50%), onde o preço e procedência dos produtos são os fatores mais relevantes na hora da compra e 90% dos consumidores acreditam que a carne suína possa ser vetor para transmissão de doenças.
Palavras–chave: bem-estar; exigência; mercado consumidor; qualidade.

Introduction

In Brazil, it is common in small properties to create locally adapted pigs or hillbilly pigs as it is commonly known. These farming are established as a form of secondary income since most of the time the property is governed by another main activity or as a form of subsistence, making the farming have the intention of serving as a source of protein for the family (NASCIMENTO *et al.*, 2018; ARAÚJO *et al.*, 2020).

The production of hillbilly pigs is characterized by the use of family labor and its diffusion in rural areas is due to its reproduction capacity and ease of rearing (VILELA *et al.*, 2021). In terms of technology, the production of hillbilly pigs is characterized by the low technology use, being its farming in a rustic way and through food and grain scraps, which makes the development of the activity slow and often unknown by consumers (ROCHA *et al.*, 2016).

In addition to providing subsistence and secondary income on the property, the farming of redneck pigs represents great importance in the social and ecological balance maintenance can be considered high-quality local products (SILVA FILHA, 2008). In 1523, Portuguese pig breeds arrived in Brazil that in 400 years of work gave rise to Brazilian breeds (Piau, Canastra, Nilo, Caruncho, Pereira, and Piratinga). Breeds that initially produced large amounts of fat had utility in the conservation of culinary products (CAMPOS *et al.*, 2014). With the requirement for better productive indexes, these breeds of the lard type lost space for the pork meat type which caused the farming to be reduced and some even reached the brink of extinction (ABSC, 2019).

With trends in the consumption of healthier foods, consumers have turned to consumption from small producers (GERALDO *et al.*, 2020). This is due to the belief that animals produced in intensive systems are lacking in well-being and during their breeding process have in their diet the insertion of hormones (ROCHA *et al.*, 2016). Theories research has been clarifying over the years. Consumers claim that the taste of pork meat raised in the swidden is more intense and tastier, which leads many to adopt the habit of consuming products offered by small producers (SANTOS *et al.*, 2019).

Points need to be raised on consumer behavior and the marketing of countryside pigs. Information that serves as the basis for structuring its production chain and disseminating the quality of the product that will be marketed (MANGAS *et al.*, 2016). Because of this, the objective was to know the profile of consumers and producers of hillbilly pigs in Alto São Francisco region of Minas Gerais state and to unveil their particularities of buying and selling this product.

Material and Methods

Descriptive and exploratory research was carried according to Gil (1999),

aiming at the measurement of a population or phenomenon. The research was developed in the municipality of Bambuí city of Minas Gerais state, with 725 meters altitude, and has the following geographical coordinates: Latitude: 20° 1' 17'' South, Longitude: 45° 57' 39'' West. It has approximately 23,839,000 inhabitants and is located in the Midwest region of the State of Minas Gerais, with a territory of 1,455,380 km² covering a vast area where small family farming properties are inserted.

For the description of the profile of producers of countryside pig farmers in the region, we used the same criterion as Dias *et al.* (2019). This method consists in sample of population, on this case were 16 farmers located at different addresses in Bambuí city. Other feature of the Dias et al. (2019) method is an objective questionnaire, on this case were 21 questions about the production system, animal care, food, and breeding strategy use. For the consumer data, 40 individuals randomly approached at the free fair, which takes place every Saturday in the main square of the city, participated in the questionnaire. The data collection instrument was pre-elaborated and included multiple choice questions, with the possibility of obtaining more than one answer in some questions to know the opinion and habit of consumption.

Data analysis was performed with the aid of spreadsheets, using Microsoft Office Excel® 2019. The data from the questionnaires were tabulated and transformed into percentage values, based on these, graphs were constructed to facilitate the interpretation of the results obtained. Combining, therefore, a descriptive statistic of the data obtained, as indicated by Valentim *et al.* (2018).

Results and Discussion

Producers of hillbilly pig farmers

After analyzing the questionnaires answered by the producers of the Bambuí region - MG, it can be verified that they present difficulties related to zootechnical information related to pig breeding. According to Rocha *et al.* (2016), these results occurred because producers do not have the habit of performing zootechnical control within the property.

The data obtained in the research show that 80% of the producers have on their property an extensive breeding system. In all cases which is loose on the property, and 10% in a semi-extensive system where the animals are released during part of the day so that they can graze and only 10% have the farming in an intensive system with structured stalls for the farming of the animals (Table 1). The system of free hillbilly pig breeding, as presented by the data is predominantly loose and is positive through animal comfort.

Thus, it is possible to add value to the product due to the form of animal husbandry since many consumers are concerned about animal welfare as reported by Fortes *et al.* (2015), the SISCAL (intensive outdoor breeding system), when well-run is an excellent welfare alternative when compared to the intensive system (confined farmed animals).

Table 1. Answers from producers on the breeding of hillbilly swine.

Sex	Male: 70%	Female: 30%	
Age	Under 30: 0%	Between 30 and 45 years: 90%	Over 45 years: 10%
Purpose of production	Meat sale: 0%	Secondary activity: 100%	
Production System	Extensive: 80%	Semi-Extensive: 10%	Intensive: 10%
Animal welfare	Apply: 5%	Do not apply: 70%	Unaware: 25%
Feeding	Corn and rest of food: 70%	Balanced: 30%	
Vaccination	Yes: 5%	No: 95%	
Hygiene:	Hold: 95%	Do Not Perform: 5%	
Mortality:	Occurs: 100%	Does not occur: 0%	
Mortality phase	Birth: 95%	Other phases: 5%	
Average production	Below 10 animals: 0%	Between 10 and 12 animals: 100%	Over 12 animals: 0%
Sale of animals:	Realize: 100%	Do not perform: 0%	
Selling form:	Live: 37,5 %	Killed: 62.5%	
Slaughter form:	Homemade: 100%	Humanitarian: 0%	
Marketing:	Order: 20%	Trade fairs: 90%	Supermarkets: 0%
Production control:	Yes: 12, 5%	No: 75%	Sometimes: 12.5%
Production complements family income	Yes: 100%	No: 0%	
Technical assistance:	Yes: 0%	No: 100%	
Reason:	Lack of assistance: 50%	Service price: 50%	No need: 0%
Associations include:	Yes: 0%	No: 100%	
Access to course of breeding and management of countryside pigs	Yes: 0%	No: 100%	

Of these interviewees, about 5% present knowledge about animal welfare and try to carry out its application within the breeding system. 70% of the producers do not have knowledge about the theme of animal welfare and as a result do not perform its application and 25% are not fully aware of the composition, being the question explained as a novelty for them. Even though most producers are unaware of the ways to perform the application of animal welfare, all of them are aware that offering better living conditions for animal development results in better productive indices.

About the food supplied to the animals, 70% of the producers supply corn grain or ground to the animals, complementing with food or serum leftovers from the cheese-making process, and only 30% work with balanced rations with the inclusion of corn, soybean, and core. According to Rocha *et al.* (2016) and Leite (2014), the use of washes together with the use of bran is common within pig breeding, as an alternative to cheapen the cost of production. The same authors point out that despite being an excellent alternative in the cost of production, one should pay to the origin of this food, given the danger of contamination by pathogens and the fact that the diet provided does not present adequate food management to the animals.

In all cases, in 100% of the responses, the farming of countryside pigs complements the family income, when there is a surplus of meat production. 90% of these producers make the sale at the fairs, and the other 10% sell through orders made by the neighboring community or people of the city. 37.5% of the production sold alive and 62.5% slaughtered.

When asked about the care performed with the animals, about 5% presents of the producers vaccinated the animals and 95% of the producers dispense with this management, resorting to veterinarians only in case of diseases that cause mortality and are outside their area of knowledge. Approximately 95% of these producers clean at least once a week the facilities where the animals remain and 5% do not clean because the animals are raised loose and the unavailability of time for the producer to carry out the management.

Regarding technical assistance in the production of redneck pigs, 50% of the producers claimed not to have access to technical assistance free of charge, due to the distance from the properties the public agencies do not act. 50% explained that the cost charged for the assistance of qualified professionals is costly being unfeasible since the production of pigs is not the main source of income of the property. According to Geraldo *et al.* (2020), the low schooling of small producers reflects the lack of access to information on technical assistance and public policies aimed at rural areas. Being one of the obstacles to the development of the activity.

In 100% of cases, producers are not part of an association aimed at rural producers. According to the reports of the producers, the old association was undone, with no formation of a new association. With the lack of information provided by the meetings of the association of rural producers or specialized technicians, the producers claim not to have specific knowledge that is applied to the farming of countryside pigs, thus using techniques passed between generations (from father to child). However, they show strong interest, if courses or lectures are offered that have as their central theme the farming and management of pigs in hillbilly-type breeding.

Regarding the control of expenses caused by production, 13% perform the accounting of data partially, noting all expenses for food and medicines, 75% of producers do not exempt from accounting for expenses during the production process and 12% of producers occasionally perform the control of expenses. According to the producers, because it is a secondary activity

or only for subsistence the amounts spent on production don't need to be accounted for because in most cases, they are low or non-existent.

The data obtained in the research corroborate the findings by Rocha *et al.* (2016), in which concluded in their study that the farming of hillbilly pigs is a source of protein that generates income for small producers. However, the lack of but the lack of information and attention in zootechnical parameters, access to care and low technology are factors that discourage the producer, encouraging them to continue creating commercially. Countryside pig farming is present in the small properties of the Bambuí region, but its notoriety is low compared to commercial production systems. According to Rocha *et al.* (2016), data lag and disclosure show the impression of a lack of activity, which strongly impedes its growth.

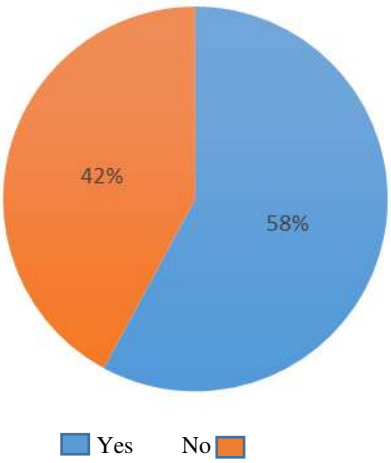
The breeding countryside pigs system occurs on an unorganized form way, without zootechnical control, and has little technology and training. However, the farming of countryside pigs has a great capacity to be used for both family subsidy and commercial exploitation, taking into account improvements that must be made in the breeding system for this to occur. The use of technical assistance and up-to-date information, when used in the production system, provides growth and better quality to the final product (SILVA FILHA *et al.*, 2008).

Hillbilly pigs' consumers

Brazil is the fourth largest producer of pork in the world. In 2020, approximately 4.43 million tonnes of pork were produced, 77% of which was destined for the domestic market and about 23% destined for export (ABPA, 2021). These data refer to the commercialization of pork of commercial production, making explicit the lag of information when directed to the product market in alternative systems, which is mainly active in cities in the interior.

About consumers of redneck pork, 55% consume it at least once a week and 45% say they do not consume it due to fat content and breeding conditions in an environment considered dirty (Figure 1).

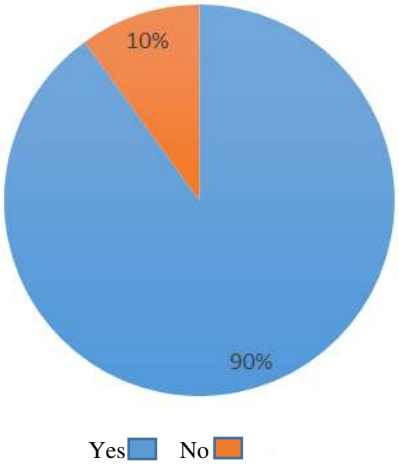
Figure 1. Consumption of pork countryside in the region of Bambuí - MG.



About 90% of consumers believe that the countryside pig can be a source of disease transmission to those who consume their meat. 10% of consumers do not believe that the hillbilly pig is a source of disease transmission, justifying its affirmation through the family history that consumes pigs raised in hillbilly systems for years and there has never been notification of diseases due to the consumption of meat from animals raised in hillbilly systems (Figure 2). The results of the research allow us to infer

that 73.4% prefer to consume the legitimate countryside pig, due to factors such as flavor, color, and differentiated texture.

Figure 2. Belief in the transmission of disease through pork.



With the technological development of food conservation techniques, the use of lard as a method of food conservation was no longer necessary, thus emerging an appeal on the part of consumers for the development of strains that contemplate higher meat production and a lower fat index. The application of genetic improvement allowed this appeal to be met, and emerging strains to produce a pig with higher lean meat yield and a lower percentage of fat (ANJOS *et al.*, 2018; CAMPOS *et al.*, 2014).

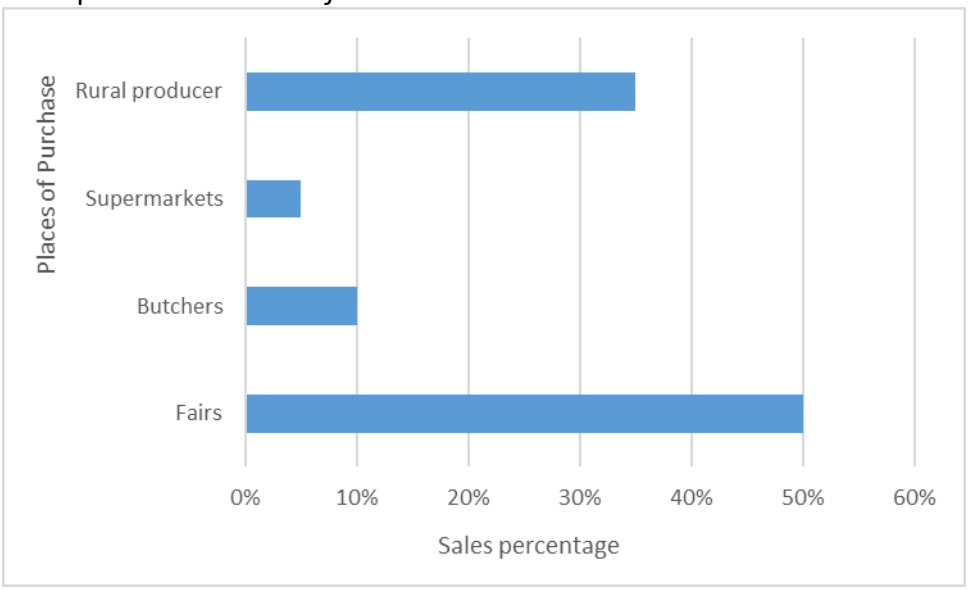
As much as there is already several relevant research published, proving the health benefits of pork consumption, the myth of being fatty meat and with the ability to increase cholesterol persists. As a measure of opposition to misinformation, the Brazilian Association of Pig Breeders (ABCS, 2021) holds National Pork Week (SNCS), which is a project carried out to bring information and encourage the insertion of pork consumption in the daily life of Brazilians.

Meat consumption is influenced by cultural habits and the influence of other factors such as religion. There is a decrease in the consumption of red meat during the time called lent when adherents of the Catholic religion through fasting are left without consuming red meat during this time. Local cultures stimulate consumption, if the region is customary in the preparation of local dishes, there is a high in the consumption of meat of a given animal by the local inhabitants, thus evidencing that several factors can interfere with the consumption of a certain type of meat (BARROS *et al.*, 2019).

All interviewees (100%) reported that price and origin factors are decisive in the acquisition of meat. More affordable prices increase interest in buying, as it is associated with the budget for purchasing groceries. The origin is another factor of greater significance. The consumer always chooses to purchase pork meat when they know the farming system, establishing trust with producers, thus allowing the direct and frequent purchase of the product or brands that are known and have their prestige, thus providing the purchase.

As reported in Figure 3, about 50% of consumers purchase meat through local fairs, 10% through butchers' shop which are present in their neighborhoods, 5% of them make the purchase in supermarkets, and 35% through direct contact with the rural producer. Data that allow us to infer the low availability of products to be marketed in high-marketing centers such as supermarkets and butcher's shop.

Figure 3. Places of acquisition of Sus *Scrofa Domesticus*.



The low dissemination of products of redneck origin is one of the factors that most negatively influence their circulation in the local market. When there is no information about a particular product and the availability of research that allows supporting the quality and changes of production standards, the product is no longer interesting to consumers, who are increasingly aware of the products they consume. When asked what would be the biggest problem for the meat of redneck pork origin not to be marketed so often, 100% of respondents said it is due to a lack of disclosures and planned marketing about the product.

According to Souza *et al.* (2021) the low consumption of pork can be justified by the lack of knowledge on the part of the consumer, who often does not know where the product can be purchased and due to the existing myths regarding the quality of pork. In a more in-depth analysis, the lack of data regarding the consumption of meat from alternative systems directly interferes with the definition of strategies that allow the structuring of the productive system, aiming at large-scale commercialization.

Conclusion

In conclusion, there are possibilities for commercialization and expansion of the commerce of products from rural systems. However, the lack of guidance from government agencies. Pork consumption is influenced by the spread of misconceptions and myths passed down from generation to generation. Its consumption in inland regions is common due to the requirement for greater meat color and flavor. The data confirm the need for greater disclosure about pigs raised in a free-range production system.

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