

FARMERS' SATISFACTION WITH DIFFERENT MARKETING CHANNELS IN THE EXTREME NORTH OF RIO GRANDE DO SUL, BRAZIL

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Received: 01/03/2022

Reviewed: 03/05/2022

Accepted: 14/07/2025

ABSTRACT

Local agri-food markets have gained prominence in recent decades for their strategic role in promoting family farming, strengthening regional economies, and building more sustainable and resilient food systems. In this context, this study analyzed the marketing channels used by 31 family farmers in the Extreme North of Rio Grande do Sul, Brazil. The research was conducted between October and November 2019 with the support of key informants and applied a structured script that investigated the farmers' profiles, their production, marketing channels, and levels of satisfaction with the channels used. The region studied is predominantly rural, with small farms (average of 21.76 hectares) and a strong presence of youth linked to the Casa Familiar Rural de Alpestre. Seven marketing channels were identified, with emphasis on street markets and sales at the farms, both with 48.39% participation. These proximity channels yielded higher satisfaction levels for farmers, with averages of 4.2 and 5, respectively, on a Likert scale from 1 to 5. Conventional channels, such as intermediaries and supermarkets, showed low satisfaction levels (average 2.5), mainly due to reduced prices and loss of product identity. Institutional channels (PNAE and PAA) were accessed by only 3.23% of the sample, although they were positively evaluated by the few farmers involved. The results indicate that proximity markets are preferred by farmers, as they strengthen social bonds, allow greater control over production and commercialization, and provide better economic and symbolic returns. The study's limitations lie in the small number of respondents and the regional specificity, which restrict the generalization of results. Nonetheless, the findings reinforce the relevance of short supply chains as viable strategies for strengthening family farming in rural areas. Comparative studies in similar contexts are recommended to deepen the understanding

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autocorrelación espacial. Se encontró que 34,4% de los municipios del país presentan bajo acceso físico a los alimentos, mientras que 40,6% de los municipios tienen un acceso económico medio. El indicador de mostró que 25,4% de los municipios se ubican con condiciones bajas de acceso físico y económico a los alimentos, siendo la zona sur del país la más afectada, en tanto que otro 64% están en condiciones de acceso físico y económico medio. Se destaca la importancia de adoptar una visión integrada de la seguridad alimentaria en México y se sugiere que abordar estas desigualdades podría conducir a una transformación del sistema alimentario en el país.

Palabras clave: economía, canasta básica, infraestructura, comercios, distribución espacial, México

RESUMEN

Los mercados agroalimentarios locales han ganado protagonismo en las últimas décadas por su papel estratégico en la promoción de la agricultura familiar, el fortalecimiento de las economías regionales y la construcción de sistemas alimentarios más sostenibles y resilientes. En este contexto, el presente estudio analizó los canales de comercialización utilizados por 31 agricultores familiares del Extremo Norte de Rio Grande do Sul, Brasil. La investigación se llevó a cabo entre octubre y noviembre de 2019 con el apoyo de informantes clave y aplicó un cuestionario estructurado que investigó el perfil de los agricultores, sus producciones, los canales de comercialización y los niveles de satisfacción con los canales utilizados. La región estudiada es predominantemente rural, con propiedades pequeñas (en promedio de 21,76 hectáreas) y una fuerte presencia de jóvenes vinculados a la Casa Familiar Rural de Alpestre. Se identificaron siete canales de comercialización, destacándose las ferias y las ventas en las propiedades, ambas con un 48,39 % de adhesión. Estos canales de proximidad ofrecieron mayor satisfacción a los agricultores, con promedios de 4,2 y 5, respectivamente, en una escala Likert de 1 a 5. Por otro lado, los canales convencionales, como los intermediarios y supermercados, presentaron bajos niveles de satisfacción (promedio de 2,5), principalmente debido a los precios reducidos y la despersonalización de los productos. Los canales institucionales (PNAE y PAA) fueron poco utilizados (3,23%), aunque bien evaluados por los pocos agricultores participantes. Los resultados indican que los mercados de proximidad son los preferidos por los agricultores, ya que fortalecen los lazos sociales, permiten mayor control sobre la producción y la comercialización, al tiempo que generan mejores retornos económicos y simbólicos. Las limitaciones del estudio se refieren al número reducido de entrevistados y a la especificidad regional, lo que restringe la generalización de los resultados. No obstante, los hallazgos refuerzan la importancia de los canales cortos como estrategias viables para fortalecer la agricultura familiar en zonas rurales. Se recomienda la realización de estudios comparativos en contextos similares para profundizar la comprensión de las dinámicas agroalimentarias locales.

Palabras clave: producciones agroalimentarias, fruticultura y hortalizas, mercados locales, canal de comercialización, Río Grande del Sur, Brasil

RÉSUMÉ

Les marchés agroalimentaires locaux ont gagné en importance au cours des dernières décennies en raison de leur rôle stratégique dans la promotion de l'agriculture familiale, le renforcement des économies régionales et la construction de systèmes alimentaires plus durables et résilients. Dans ce contexte, cette étude a analysé les canaux de commercialisation utilisés par 31 agriculteurs familiaux de l'extrême nord de l'État du Rio Grande do Sul, au Brésil. La recherche a été menée entre octobre et novembre 2019 avec l'appui d'informateurs clés, et s'est appuyée sur un questionnaire structuré portant sur le profil des agriculteurs, leurs productions, les canaux de commercialisation et leur niveau de satisfaction vis-à-vis de ces canaux. La région étudiée est majoritairement rurale, avec de petites exploitations (moyenne de 21,76 hectares) et une forte présence de jeunes liés à la Casa Familiar Rural d'Alpestre. Sept canaux de commercialisation ont été identifiés, les marchés de rue et les ventes à la ferme étant les plus courants (48,39 %). Ces canaux de proximité ont offert un plus grand niveau de satisfaction aux agriculteurs, avec des moyennes de 4,2 et 5 respectivement sur une échelle de Likert de 1 à 5. En revanche, les canaux conventionnels, comme les intermédiaires et les supermarchés, ont affiché de faibles niveaux de satisfaction (moyenne de 2,5), en raison notamment des prix bas et de la perte d'identité des produits. Les canaux institutionnels (PNAE et PAA) ont été peu utilisés (3,23 %), bien qu'ils aient été bien évalués par les quelques agriculteurs concernés. Les résultats indiquent que les marchés de proximité sont les préférés des agriculteurs, car ils renforcent les liens sociaux, permettent un meilleur

contrôle de la production et de la commercialisation, et offrent des retours économiques et symboliques supérieurs. Les limites de l'étude concernent le faible nombre de répondants et la spécificité régionale, ce qui limite la généralisation des résultats. Néanmoins, les résultats soulignent l'importance des circuits courts comme stratégies viables pour renforcer l'agriculture familiale en zones rurales. Des études comparatives dans des contextes similaires sont recommandées pour approfondir la compréhension des dynamiques agroalimentaires locales.

Mots-clés : productions agroalimentaires, fruits et légumes, marchés locaux, canal de commercialisation, Rio Grande do Sul, Brésil

RESUMO

Os mercados agroalimentares locais têm ganhado destaque nas últimas décadas por seu papel estratégico na promoção da agricultura familiar, no fortalecimento das economias regionais e na construção de sistemas alimentares mais sustentáveis e resilientes. Neste cenário, este estudo analisou os canais de comercialização utilizados por 31 agricultores familiares do Extremo Norte do Rio Grande do Sul, Brasil. A pesquisa foi realizada entre outubro e novembro de 2019 com o apoio de informantes-chave, sendo aplicado um roteiro estruturado que investigou o perfil dos agricultores, suas produções, canais de comercialização e níveis de satisfação com os canais utilizados. A região estudada é majoritariamente rural, com propriedades pequenas (média de 21,76 hectares) e forte presença de jovens ligados à Casa Familiar Rural de Alpestre. Foram identificados sete canais de comercialização, com destaque para as feiras e vendas nas propriedades, ambas com 48,39% de adesão. Esses canais de proximidade proporcionaram maior satisfação aos agricultores, com médias de 4,2 e 5, respectivamente, numa escala Likert de 1 a 5. Já os canais convencionais, como intermediários e supermercados, apresentaram baixos níveis de satisfação (média 2,5), principalmente devido aos preços reduzidos e à descaracterização dos produtos. Os canais institucionais (PNAE e PAA) foram pouco acessados (3,23%), embora apresentassem boa avaliação entre os poucos agricultores inseridos. Os resultados indicam que os mercados de proximidade são os preferidos pelos agricultores, por fortalecerem os vínculos sociais, permitirem maior controle sobre a produção e comercialização, e proporcionarem melhores retornos econômicos e simbólicos. As limitações do estudo referem-se ao número reduzido de entrevistados e à especificidade regional, o que restringe a generalização dos resultados. Ainda assim, os achados reforçam a importância dos canais curtos como estratégias viáveis para fortalecer a agricultura familiar em regiões rurais. Estudos comparativos em contextos similares são recomendados para aprofundar a compreensão das dinâmicas agroalimentares locais.

Palavras-chave: produções agroalimentares, fruticultura e hortaliças, mercados locais, comercialização agroalimentar, Rio Grande do Sul, Brasil

1. INTRODUCTION

In the agri-food sector, marketing channels play a central role in connecting producers and consumers. Historically dominated by conventional and long chains, these systems have favored large-scale distribution and standardization, often at the expense of local diversity, producer autonomy, and transparency (Marsden *et al.*, 2000; Goodman, 2003; Renting *et al.*, 2003). This model has contributed to several issues, including environmental degradation, social exclusion, and the disconnection between food production and consumption (Ilbery & Maye, 2005; Lamine *et al.*, 2019; Gruchmann *et al.*, 2019).

In response, Alternative Food Networks (AFNs) have emerged, aiming to reestablish direct connections between farmers and consumers while promoting sustainability, food security, and territorial development (Renting *et al.*, 2003; Schneider & Gazolla, 2017; Garner & Ayala, 2018). These networks reflect a shift from standardized food production to models grounded in values such as proximity, quality, and place (Goodman, 2003; Higgins *et al.*, 2008). They also contribute to local economies, reduce food miles, and foster awareness of food systems through direct interactions (Hardesty & Leff, 2010; Mgale & Yunxian, 2020).

In Brazil, particularly in rural areas, family farmers have adopted diversified commercialization strategies, engaging with both conventional and alternative markets as a means of resilience and income improvement (Gazolla *et al.*, 2018; Camara *et al.*, 2020; Jesus *et al.*, 2022). In this context, these networks provide local and fresh food, besides contributing to an agricultural awareness in the communities in which they are inserted, as well as to the education about the developed food system, due to the direct relationship between farmers and consumers (Dunne & Wright, 2017; Garner & Ayala, 2018; Mgale & Yunxian, 2020). Likewise, they take on a more sustainable option for obtaining biodiversity from production to consumption and corroborate aspects that aim to save energy and reduce distances from the production site to marketing, thus improving the civic responsibility of retaining economic value at the location (Ilbery & Maye, 2005; Hardesty & Leff, 2010; Renting *et al.*, 2017).

From this perspective, each location presents, from its particularities, a development around food networks. Particularly in the northern region of Rio Grande do Sul, Brazil, a significant number of farmers who present diversification concerning both production means and marketing channels is observed (Gazolla *et al.*, 2018). Associated with this, the farmers insert themselves in different markets, either conventional ones intended for the production of commodities and/or alternative ones, in which local agrifood productions are distributed (Camara *et al.*, 2020). That said, this study proposed to analyze especially which marketing channels are accessed by farmers and their respective satisfaction levels with them. This study is relevant as it offers empirical evidence on the commercialization dynamics in a specific rural region of Brazil, highlighting the potential of short food supply chains not only to strengthen local economies and food sovereignty but also to promote greater social recognition of the work carried out by family farmers, as well as to understand the level of satisfaction regarding the different forms of agri-food product distribution.

2. AGRIFOOD MARKETS AND MARKETING CHANNELS

The farmers who seek insertion in markets face challenges that permeate the complexity of offering quality products/food, as well as the periodicity of the supply (Dunne & Wright, 2017; Printezis & Grebitus, 2018). From another standpoint, the construction of alternative agrifood markets goes through the particular reality of each territory (Schneider & Gazolla, 2017; Camara & Andreatta, 2021).

Yacamán *et al.* (2019) explained that local markets are «game changers» because they represent a social innovation that allows food from the farmers to resist the standardization because they promote a more considerable recognition and better prices for products with distinctive quality. On the other hand, local and proximity markets are perceived by their customers as friendlier, more personal, and more rural environments (Dunne & Wright, 2017). Likewise, they are a two-way street, given they are also considered an essential tool to get farmers out of poverty and increase food security, especially in developing countries (Printezis & Grebitus, 2018; Yacamán *et al.*, 2019; Mgale & Yunxian, 2020). Based on this perspective, Schneider (2016) addressed that farmers are inserted around four types of markets, primarily due to the combination of marketing channels used. The following box (Table 1) presents such markets and their main characteristics.

Hence, the «proximity and territorial» markets are constituted by channels that prioritize the direct contact between farmers and consumers (Table 1). In view of this, the commercialization basically takes place in two ways in such markets: face-to-face and by spatial proximity (Renting *et al.*, 2003), which have as their primary goal the ability to socialize value information relative to the mode of production, origin, and distinctive quality assets in each product/food.

That said, the selection of the marketing channel for distributing the production is a vital decision for the farmer family and has a significant impact on the family income (Printezis & Grebitus, 2018; Mgale & Yunxian, 2020). This is because, before choosing a marketing channel, the farmers consider the

Table 1*Types of agrifood markets and their characteristics*

Types of markets	Type of family farmer	Locus and/or spatial reach	Nature of the exchanges / business model	Form of regulation	Marketing channels
Proximity	Peasant: surplus farmer	Spot: Direct sale: Local only	Interpersonal	Trust	On the farm (harvest-pay)
			+ Solidary	+ Friendship	At home Roadside Direct delivery Local Market
Territorial	Family farmer: Simple commodity farmer	Spot: Local, regional, and territorial.	Diversified	Reputation / Trust	Regional market;
			+ Complementarity	+ Origin + Prices	National market Sales networks; Events; Specialized shop; Restaurants; Sales association; Fruit and vegetable market
Conventional	Commodity farmer	No defined place Placeless / Unbound	Competitive	Contract + Prices	Middlepeople Cooperative Agroindustry Private company Internet Supermarkets
				Public contracts + Laws	School meals; Fair trade; International agencies (FAO; PMA); NGOs; Hospitals, universities, armed forces; Assistance entity; Government stocks
Public and institutional	All types of suppliers	Multispatial	Bidding, Public selection		

Source: Adapted from Schneider (2016)

costs associated with transport, returns, the capacity of the channel to capture more consumers, the trust level among the available channels, and the familiarity of the markets (Mgale & Yunxian, 2020). Relative to the choice of a marketing channel by farmers, the same authors explained that the factors related to transaction costs, family characteristics, product/food characteristics,

and social network access have significant effects on the decisions about the marketing channel.

In turn, the short marketing channels may also allow farmers to have more control over their distribution and marketing activities while offering an alternative for consumers to seek fresh products directly from where they were produced (Renting et

al., 2017). The reconnection between consumers and farmers has promoted a more considerable consumption of locally produced goods. The benefits were identified as the strengthening of local economies, reduction of the fossil fuel demand, increase in access to fresh and nutritious products, and rise of the degree of social interaction (Ilbery & Maye, 2005; Hardesty & Leff, 2010; Mack & Tong, 2015; Koutsou & Sergaki, 2019).

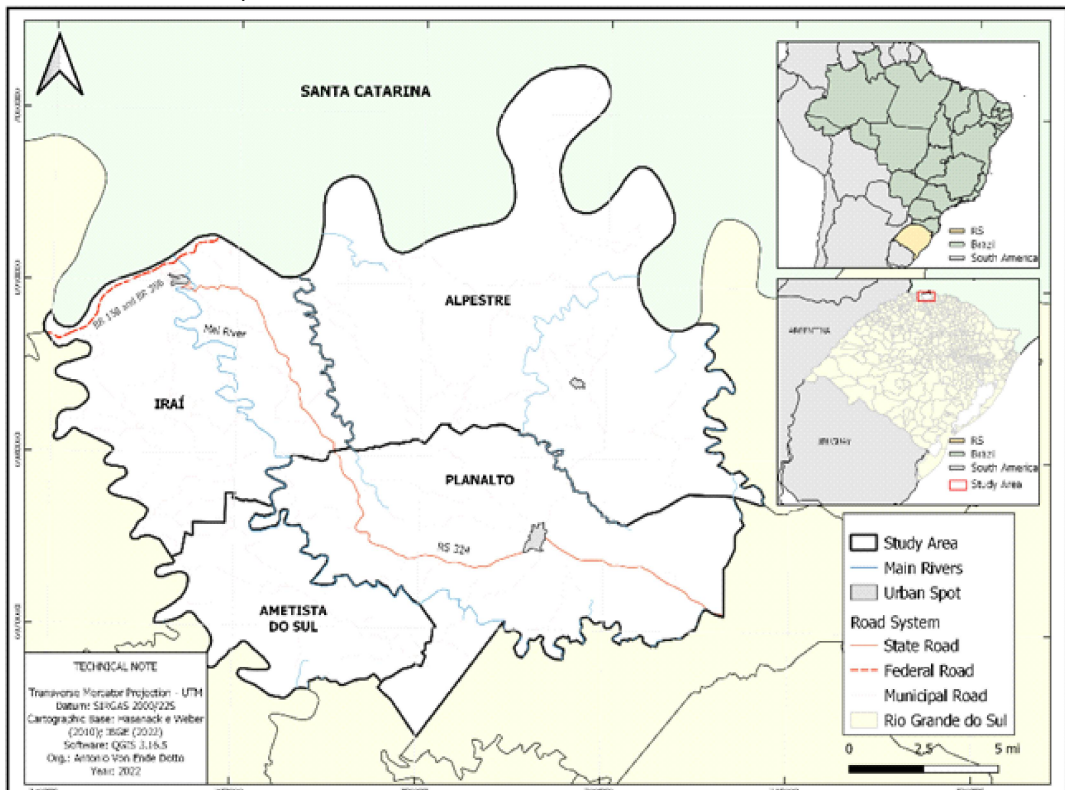
Associated with this, the regional markets and events present a wide variety of local and artisanal food products available to taste and purchase, to the detriment of supermarket chains (conventional markets) (Dunne & Wright, 2017). This diversity boosts the search by consumers and propitiates the growth of local markets (Renting *et al.*, 2003; Yacamán *et al.*, 2019). However, Mgale & Yunxian (2020) suggested several agricultural and market characteristics that influence the choice of one or more marketing channels by farmers, even

if the short channels represent the maximum benefits relative to long channels.

Brandão *et al.* (2020) stressed that the markets the farmers participate in are supported primarily by the participation in street markets and, thus, take on a relationship of dependence on the proximity and territorial markets. The authors analyzed 91 farmers who maintained commercialization in short channels, presenting around eight channels through which they carried out the marketing. In this case, street markets represented 72.5% of the accessed channels (Brandão *et al.*, 2020). That said, it is observed that short marketing channels are a way to increase the demand, not only for local food but also for food distributed in a distinctive manner (Printezis & Grebitus, 2018). However, even with there being benefits in short channels, the farmers are still inserted in long channels, in essence because they see it as a guarantee of the commercialization of the production (Camara *et al.*, 2020).

Figure 1

Location of the municipalities covered in the field research



3. RESEARCH METHOD

The studied region corresponds to the Extreme North of Rio Grande do Sul (RS), Brazil, municipalities of Alpestre (67.74%), Ametista do Sul (16.13%), Planalto (12.90%), and Iraí (3.23%). The location of the region and municipalities in which the study was carried out is represented in Figure 1.

This region is particularly rural, formed by small municipalities, with on average 23,242 inhabitants, with the average size of the rural establishments being 14.17 hectares (IBGE, 2017). The main products stem from fruit farming and tobacco growing, which are generally developed due to the geographical conditions of the region, with intense undulations and restricted areas for mechanized crops (Oderich & Miguel, 2017).

Data collection took place in October and November 2019 through a structured research script carried out in the respective establishments of the farmers. The rural establishments were selected a priori with the aid of key informants, in this case, the leaders of the Extremo Norte cooperative and the Casa Familiar Rural Regional de Alpestre high school, both located in the municipality of Alpestre but with broad knowledge and activity in the region considered in the study. Hence, 31 farmers who commercialize through short channels were identified in the four municipalities.

The applied script was organized in sections that investigate the farmer profiles, their productions, marketing channels, and satisfaction in conducting the commercialization of their production through the respective channel (Table 2). From this perspective, Table 2 presents the variables used in each step of the study.

The variables used were based on similar studies. Relative to the characterization of the farmers and their respective rural establishments (Gazolla *et al.*, 2018; Camara *et al.*, 2020). Concerning the survey of the productions and marketing channels used (Pozzebon *et al.*, 2018; Brandão *et al.*, 2020; Camara *et al.*, 2020; Verano *et al.*, 2021; Jesus *et al.*, 2022).

Farmer satisfaction with the marketing channels was measured through a five-point Likert scale (1 - dissatisfied; 5 - very satisfied). The Likert scale consists of elaborating questions based on statements to which the farmers inform their degree of agreement (Júnior & Costa, 2014). In turn, the five-point scale was selected because it is considered easier, more precise, and faster, to the detriment of the other scales (Dalmoro & Vieira, 2014). Hence, this method is appropriate because it allows analyzing the levels of satisfaction with the marketing channels accessed by the farmers.

Concerning the data analysis, it was performed through descriptive statistics. This

Table 2

Variables used for surveying data

Farmer characterization	Rural establishment characterization	Survey of the productions	Marketing channels used
Gender	Number of hectares	Production amount	Channels accessed
Age	Existence of a preservation area	Variety of fresh productions	Channels that present more significant commercialization
Marital status	Size of the area intended for crops	Variety of agroindustrial productions	Channels that commercialize agroindustrial products
Education level	Form of obtainment		Channels that commercialize fresh products
	Number of years it has Municipality		Satisfaction levels per channel

type of analysis assumes the description of characteristics of a given population or even the establishment of relationships between the variables. Hence, the descriptive analysis aims to identify, report, and compare, among other matters (Raupp & Beuren, 2006). Associated with this, the analysis and classification of the markets and channels accessed by the farmers were based on the approach by Schneider (2016), which is exposed in Table 1.

4. THE FARMERS AND MARKETING CHANNELS

This section of the paper is dedicated to the results and discussions and divided into two axes. The first corresponds to the profiles of the farmers and their respective rural establishments. The second addresses the production aspects, the channels used for commercialization, and the level of satisfaction of the farmers with such channels.

4.1. PROFILES OF THE FARMERS AND RURAL ESTABLISHMENTS

In terms of the age of the farmers, it gravitates around 34 years. However, 48.39% of the 31 farmers were in the 14 to 24-year-old range. This percentage is related to the youths connected to the Casa Familiar Rural Regional de Alpestre high school, which, in general, use the short channels as a way to develop their «life projects». These projects are developed throughout the three years of high school, in an alternation system in which the youth's study one week at school and remain for two weeks

at the establishments, developing the production, management, and marketing activities. In this sense, the percentage of farmers who had children who had studied and/or were studying at the Casa Familiar Rural Regional de Alpestre high school was 87.52% of the respondents. Hence, Table 3 shows the education level and marital status of the farmers per age range.

Regarding the marital status of the farmers, 51.61% were married. However, their age range corresponded to 38.70% over 37 years old and only two women aged 18 to 22 years (6.45%). Other 45.16% were single and concentrated from 14 to 24 years old (41.94%). Although the rural population is aging (Spanevello *et al.*, 2017), in the region, the population still presents a significant number of youths (Cargnin, 2016), an aspect that is primarily related to the presence of the Casa Familiar Rural Regional de Alpestre high school, which propitiates to the youths and their families the development of life projects of their interest at their rural establishments.

In matters of education level, 54.84% presented an incomplete high school education who were in the age range over 50 years old. In view of this, regarding the farmers, especially the family members, a correlation of older farmers with lower education levels is observed (Spanevello *et al.*, 2017; Shultz *et al.*, 2017). Upon being asked about the education level, they argued that work on the fields was burdensome, occupied most of their time, and, at the school age, they found difficulty attending

Table 3

Percentage per age range of the education level and marital status of the farmers

Age range (years)	Education level						Marital status			
	Incomplete elementary school	Complete elementary school	Incomplete high school	Complete high school	Complete higher education	Total	Married	Single	Widowed	Total
14-24	19.35	0.00	12.90	12.90	3.23	48.39	6.45	41.94	0.00	48.39
25-36	3.23	0.00	3.23	0.00	0.00	6.45	6.45	0.00	0.00	6.45
37-50	6.45	3.23	6.45	3.23	0.00	19.35	19.35	0.00	0.00	19.35
Over 50	25.81	0.00	0.00	0.00	0.00	25.81	19.35	3.23	3.23	25.81
Total	54.84	3.23	22.58	16.13	3.23	100.00	51.61	45.16	3.23	100.00

school regularly. These particularities are also found in other studies with farmers in the region (Spanevello *et al.*, 2017; Camara & Andreatta, 2021).

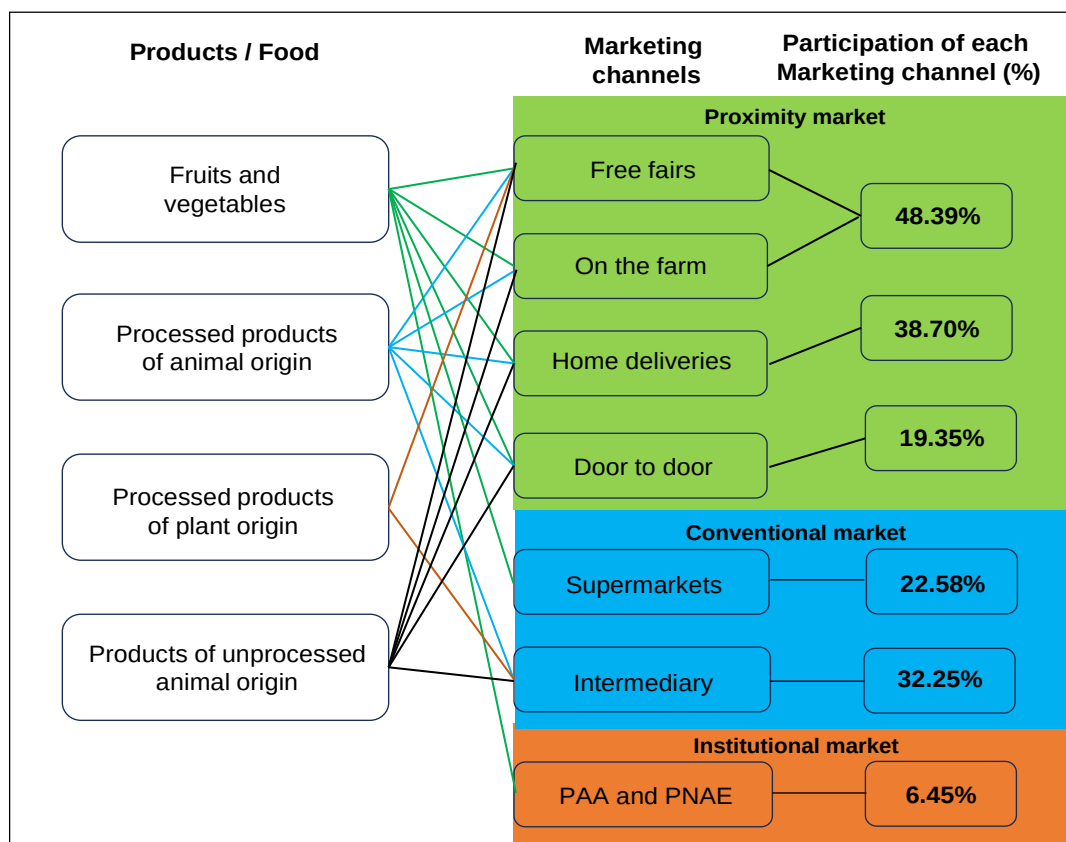
Relative to the number of hectares of the establishments, the average was 21.76 hectares; however, the standard deviation was 12.27, indicating heterogeneity among the farmers analyzed. This occurred because the minimum and the maximum number of hectares found were 5 and 41. Gazolla *et al.* (2018) also corroborated these rural establishment sizes in the region, making evident the crops intended for short channels to be carried out in family establishments (Brasil, 2006). Hence, after this initial characterization of the farmers, the next topic presents the results regarding the marketing channels.

4.2. MARKETING CHANNELS USED BY THE FARMERS IN THE EXTREME NORTH OF RS AND THE SATISFACTION LEVELS

Overall, the 31 farmers analyzed were involved in seven different marketing channels. After identifying all the marketing channels used, the productions and their respective marketing channels employed by each farmer to distribute their products were organized. Street markets and commercialization at the rural establishments of the farmers were the most accessed channels regarding the proximity market, with both representing 48.39% of the sample. Figure 2 depicts the types of products/food marketed in each channel and the percentage of participation by the farmers in the channels accessed, following the market types proposed by Schneider (2016).

Figure 2

Markets, products, and participation percentage in the different marketing channels the farmers were involved in



The participation percentages for each marketing channel presented in Figure 2 were calculated based on the number of farmers who reported using that specific channel to commercialize any of their products, divided by the total number of farmers in the sample ($n = 31$). Importantly, since many farmers use more than one marketing channel simultaneously, the total percentage across all channels exceeds 100%. The calculation does not refer to the volume of production or frequency of use per channel, but rather to the incidence of channel usage among farmers. Each percentage reflects the proportion of farmers who reported using that channel, regardless of the type or quantity of product sold through it. This method allows us to identify the most commonly used channels across the sample and to compare the relative importance of proximity, conventional, and institutional markets in the regional commercialization strategy of the farmers.

Street markets are the most traditional form of short food supply chains (Renting *et al.*, 2003). Street markets also present the highest variety of fresh products made available directly from the farmers (Dunne & Wright, 2017). This evidence corroborates the results found, given that the street markets concentrate all product segments, from fruits and vegetables in general to transformed products of animal and/or plant origin, to those with no processing such as milk, honey, and eggs. On the other hand, this marketing channel is one of the top income generators and presents a lower risk of losses and more significant production autonomy, given that the farmers may dimension their productions according to the history of weekly sales (Schultz *et al.*, 2017; Da Silva *et al.*, 2020).

From the same perspective, the «On the farm» channel had the same participation rate as street markets (48.39%). Overall, this can be attributed to the fact that the region is predominantly composed of rural areas (IBGE, 2017), which fosters familiarity between farmers and consumers. Additionally, many urban residents have family ties with those living in rural communities. Furthermore, the relatively small size of the municipalities (Oderich & Miguel, 2017; Gazolla *et al.*, 2018)

contributed to reducing the distance between rural and urban areas, facilitating access to the farmers' establishments.

The marketing channels were largely directly related to the type of product/food commercialized. The processed products of animal origin were commercialized through five channels, four of which presented direct relationships (face-to-face) with the consumers (Renting *et al.*, 2003), configuring proximity markets (Schneider, 2016). The products of animal origin were mostly not formalized (inspection seals), resulting in the choice by farmers to commercialize through the channel closest to the end consumer. These specificities of the products corroborate, among other factors, the choice by the farmer at the time of entering a marketing channel (Mgale & Yunxian, 2020).

Hence, the channels accessed the least by this sample of farmers referred to the Brazilian Food Acquisition Program (PAA) and National School Feeding Program (PNAE), both with 3.23% participation, and door-to-door sales (19.35%). The institutional market is organized in the region by the Extremo Norte cooperative, which registers the farmers and productions for supplying both the PNAE and the PAA. Although the cooperative organization helps in the procedures, only one farmer supplies the PNAE and one the PAA. The farmers who were not in this market, when asked about the reasons for such, emphasized that the low value generated in the deliveries and the work that it generates on weekends to organize the productions for delivery at the institutions at the start of every week do not compensate entering such markets.

Besides these factors, De Paula *et al.* (2014) and Jesus *et al.* (2022), pointed out that the organization of production and the production systems developed in the regions influence the larger or smaller insertion of farmers in institutional markets. This relationship is largely a reflection of the disarticulation in the regions by the municipal power and civil society in the execution and valorization of public policies; even with the productions being more diversified, those directed at conventional markets receive more support (Sousa *et al.*, 2020), such as tobacco growing and fruit

farming (grapes - *Vitis vinifera* - and oranges - *Citrus sinensis*). On the other hand, the legal requirements of municipal and state inspection of the transformed products, as well as the difficulty in maintaining a production scale of fruits and vegetables in low-technology and labor rural establishments, are among the factors that lead to low adhesion to the program by the farmers (De Paula *et al.*, 2013).

From this perspective, the fruit and vegetable products were present in six of the seven markets found (Figure 2). This setting refers to the fact that even farmers who do not dedicate themselves to proximity markets especially may seasonably come to commercialize surplus productions, either at their properties or even in supermarkets of the region (Shultz *et al.*, 2017; Camara *et al.*, 2020; Brandão *et al.*, 2020). However, no fruit and vegetable productions were found distributed through the «intermediary» channel. One of the factors related to the productions being more perishable, especially greenery, so the farmers seek to commercialize directly as fast as possible so as not to have losses, entering various channels simultaneously (Shultz *et al.*, 2017; Yacamán *et al.*, 2019; Camara *et al.*, 2020; Mgale & Yunxian, 2020), corroborating from proximity markets to conventional and institutional markets.

On the other hand, the transformed productions of plant origin (molasses, brown sugar, cachaça, and jelly), those transformed of animal origin (salami, cheese, dulce de leche), and those not transformed (honey, milk, and eggs) were distributed through the main channels direct to consumers (street markets, on the farms, home deliveries, and door-to-door) and also via intermediaries. These particularities are associated with the level of trust, quality, and familiarity of consumers with the farmers, especially regarding food of plant and animal origin that have no inspection seal (Renting *et al.*, 2003; Dunne & Wright, 2017; Mgale & Yunxian, 2020).

The channel that presented an average between satisfied and very satisfied (4 to 5) regardless of the product commercialized was «Street markets». Street markets are where more interactions occur between farmers and consumers and the environment in which the productions are available to the public presenting the most significant variety of products/food, in addition to being a space socially constructed by the actors involved in the sale and purchase process (Renting *et al.*, 2003; Shultz *et al.*, 2017; Dunne & Wright, 2017; Yacamán *et al.*, 2019).

In turn, the «on the farm» channel yields the highest satisfaction level (5) regarding the

Table 4

Markets, products, and participation percentage in the different marketing channels the farmers were involved in

Type of markets	Channels	Products/food				Average satisfaction level
		Fruits and vegetables	Transformed products of plant origin	Transformed products of animal origin	Unprocessed products of animal origin	
Proximity markets	Street markets	4.5	4.5	4	4.5	4.2
	On the farm	5	0	4.5	4.5	
	Deliveries	4		4.5	4	
	Door-to-door	4	0	3.5	3.5	
Conventional markets	Intermediary	0	2	2.5	3	2.5
	Supermarkets	2.5	0	0	0	
Institutional markets	PAA and PNAE	4.5	0	0	0	4.5

sale of fruits and vegetables. Beyond the economic issue, given that the farmers have no expenses to transport the products/food, commercializing at their own properties avoids waste and strengthens the relationships, creating relationships that surpass commercial ones (Low *et al.*, 2015; Printezis & Grebitus, 2018; Jesus *et al.*, 2022), propitiating the maximum benefits that a channel may offer (Mgale & Yunxuan, 2020).

Despite the reduced number of farmers in the sample in the institutional market channel (2), they presented a good satisfaction level for the commercialization of fruits and vegetables. This channel greatly helps the organization of the production because the farmer chooses the product to be commercialized through a previous public notice, and it also promotes the guarantee of extra income (Villar *et al.*, 2013; Da Silva *et al.*, 2020). Another factor that corroborates the satisfaction level of the farmers is due to the aspect that the production of fruits and vegetables was already an activity consolidated by the family farmers, has no significant health requirements, and presents a wide variety of products to be produced (Ribeiro *et al.*, 2013).

On the other hand, for commercializing the transformed products of animal and plant origin through the «intermediary» channel, the satisfaction level was on average «little satisfied» (2.5). This result may be largely explained by the fact that the farmers retain smaller profit margins even when marketing more significant product amounts (Camara *et al.*, 2020); also, the product does not maintain an association with the characteristics of the family, tradition, and/or territory where it was produced (Renting *et al.*, 2003; Printezis & Grebitus, 2018; Garner & Ayala, 2018). The same occurs when the fruit and vegetable products are distributed through supermarkets since the farmers claimed to receive prices much below those commercialized directly to consumers. Despite not being satisfactory for the farmers, these channels are important because they expand the capacity of production distribution, especially of perishable productions; however, the prices are generally lower for the farmers and higher for the end consumers (Yacamán *et al.*, 2019; Camara *et al.*, 2020).

Based on this, the proximity markets presented an average satisfaction level of 4.2, with levels between satisfied (4) and very satisfied (5) for the farmers who marketed their productions using such channels (Table 2). In turn, the farmers were on average little satisfied (2.5) with conventional markets. This evidence reinforces the potential of proximity markets, which allow farmers to break from the food standardization processes (Yacamán *et al.*, 2019) while reinforcing the bonds between farmers and consumers, resocializing the sales-purchase spaces (Dunne & Wright, 2017; Printezis & Grebitus, 2018). Beyond these aspects, the markets that aim at the «approximation» between the agents are also considered an essential tool to enable food security and generate income (Mgale & Yunxian, 2020).

5. FINAL CONSIDERATIONS

Short food supply chains are part of the local food supply dynamics and present various settings. However, one may observe that the channels with more farmers were those in which the proximity level with consumers is more considerable, such as street markets and commercialization at the farmer's establishments. The fruit and vegetable productions were the most widespread among the marketing channels found, in summary corroborating the fact that some farmers do not have agrifood production as their primary activity but commercialize fresh productions seasonally. On the other hand, because the region is particularly rural, the channels are characterized by the proximity of the production and commercialization sites, despite the marketing occurring through various means.

Regarding the satisfaction level with the marketing channels, the farmers felt very satisfied with commercialization at their properties, mainly because they were the environments where the families resided, where the productions took place, and, especially, because they felt valued by their consumers who sought these locations. However, regarding the «intermediary» and «supermarket» channels (conventional markets), the farmers were on average little satisfied, on the one hand, because they received lower prices and, on the

other, because they are channels that the farmers joined when the other channels did not accommodate the supply and/or the production needed to be distributed quickly, as in the case of fruits and vegetables.

Despite the empirical evidence found, it corresponds to a specific region and farmer profile, factors that are one of the limitations of the study since they cannot be generalized. Likewise, because the featured region is particularly rural, new studies in regions with similar characteristics may be carried out with a comparison purpose and to understand the agrifood dynamics that are distant from more populous regions.

6. ACKNOWLEDGMENT

We would like to thank the public, free and quality university for the opportunity to develop and carry out this study. It was carried out with the support of the Coordination for the Improvement of Higher Education Personnel - Brazil (CAPES) - Financing Code 001.

The research was approved by the Ethics Committee under project number CAAE 23916719.3.0000.5346

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