PERCEPTIONS AND DEMANDS OF FAMILY FARMERS (BRAZIL AND SPAIN) IN RELATION TO CLIMATE CHANGE

PERCEPÇÕES E DEMANDAS DOS AGRICULTORES FAMILIARES (BRASIL E ESPANHA) EM RELAÇÃO ÀS MUDANÇAS CLIMÁTICAS

PERCEPCIONES Y DEMANDAS DE LOS AGRICULTORES FAMILIARES (BRASIL Y ESPAÑA) EN RELACIÓN CON EL CAMBIO CLIMÁTICO

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ABSTRACT: The study intends to understand the perception and demands of rural producers in relation to climate change, using hermeneutic phenomenology as a basis, to contribute to Public Policies of protection and Environmental Education aimed at the family farmer. The observations and interviews were carried out in the Western region of Paraná (Brazil) and in the region of Galicia (Spain). In general, the participants perceive several climatic changes in the last years and attribute the worsening of the climate to anthropic actions. The demands involve the scarcity of financial resources, difficulty in accessing managers and decision-makers, and the discrepancy of treatment between small and large farmers by society and public power. It is understood that there is a need to create educational actions that encourage the subject to critically reflect on production and consumption models and on public policies that contemplate family farmers as they contemplate landowners, promoting a more sustainable and less vulnerable rural development.

KEYWORDS: Climate Change. Impacts. Public policies. Environmental Education. Small Producer.

RESUMO: *O estudo pretende compreender a percepção e demandas de produtores rurais em relação às alterações climáticas, utilizando como base a fenomenologia hermenêutica, para contribuir com Políticas Públicas de proteção e Educação Ambiental voltadas para o agricultor familiar. As observações e entrevistas foram realizadas na região Oeste do Paraná (Brasil) e na região da Galícia (Espanha). Em geral, os participantes percebem diversas alterações climáticas nos últimos anos e atribuem a piora do clima a ações antrópicas. As demandas envolvem a escassez de recursos financeiros, dificuldade em terem acesso aos gestores e tomadores de decisões e a discrepância de tratamento entre os pequenos e grandes agricultores pela sociedade e poder público. Compreende-se a necessidade em criar ações educativas que incentivam o sujeito a refletir criticamente sobre modelos de produção e consumo e Políticas Públicas que contemplem o agricultor familiar como contemplam latifundiários, promovendo um desenvolvimento rural mais sustentável e menos vulnerável.*

PALAVRAS-CHAVE: *Alterações Climáticas. Impactos. Políticas Públicas. Educação Ambiental. Pequeno Produtor.*

RESUMEN: *El estudio tiene como objetivo comprender la percepción y las demandas de los productores rurales en relación con el cambio climático, utilizando como base la fenomenología hermenéutica, para contribuir a las Políticas Públicas de protección y Educación Ambiental dirigidas al agricultor familiar. La investigación fue realizada en la región Oeste de Paraná (Brasil) y en la región de Galicia (España). En general, los labriegos perciben varias alteraciones climáticas en los últimos años y atribuyen el empeoramiento del clima a acciones antrópicas. Las demandas se refieren a la escasez de recursos financieros, dificultad de acceso a los gestores políticos y discrepancia de trato entre pequeños y grandes agricultores por parte de la sociedad y de los poderes públicos. Se entiende que es necesario crear acciones educativas que incentiven al sujeto a reflexionar críticamente sobre modelos de producción y consumo y políticas públicas que contemplen a los labriegos como contemplan a los terratenientes, promoviendo un desarrollo rural más sostenible y menos vulnerable.*

PALABRAS CLAVE: *Cambio climático. Impactos. Políticas públicas. Educación ambiental. Pequeño productor.*

Introduction

The current context of multiple crises has demonstrated that planet Earth is going through three major considerable emergencies, namely: the health crisis, the biodiversity loss crisis and the climate crisis. They are interconnected and impact society socially and economically (Artaxo, 2020).

Since the 60s of the last century, environmental issues have been debated and have gained great importance in society. However, today, more than ever, it is so urgent to discuss, study and publicize environmental issues, especially the Climate Emergency. This has been widely recognized as one of the greatest challenges facing humanity in the 21st century. Resulting from human activities and natural processes, it has caused significant damage to ecosystems, agricultural production and global food security (González Gaudiano; Meira Cartea, 2020).

The latest report from the Intergovernmental Panel on Climate Change – IPCC (2023) warns that the increase in temperature is occurring earlier than previous reports predicted, and the consequences of the climate crisis are reaching irreversible levels, impacting populations in socioeconomic vulnerability more.

In Brazil, high average temperatures and reduced rainfall in several regions are expected to increase the risk of damage to agricultural production. This will bring significant socioeconomic impacts, both at the local, regional and national levels (Marengo *et al*., 2022). In Spain it is no different, according to Ideara Investigación (2021), the geographic location, plus the bioclimatic characterization means that the country presents high vulnerability to the climate crisis, including in agriculture and livestock activities.

Although the IPCC special report on global warming of 1.5 C (IPCC, 2018) objectively points out the need to end the deforestation of tropical forests and significantly reduce emissions from the burning of fossil fuels until emissions reach zero by 2050, it is believed that other practices can contribute to this challenge, with educational perspectives and public policies that aim to mitigate the impacts of Climate Change, in urban and rural areas, and create sustainable solutions. With this in mind, it is essential to consider the perceptions of small rural producers, who are directly affected by these changes and play a fundamental role in food production and rural development.

Given the above, this qualitative study (Minayo, 1994) seeks to understand the perception and demands of small rural producers, in relation to climate change, in two locations

where agriculture is the basis of economic and subsistence activities, such as the Western region of Paraná (Brazil) and Galicia (Spain).

Environmental perception and knowledge construction

For initiatives to be carried out, both by agents in the field, government institutions and civil society, instrumental information and knowledge on the subject are necessary. From this perspective, social sciences and pedagogy help us understand how people perceive changes around them and how they act in relation to them (Litre; Bursztyn, 2015).

According to Bachelard (1993), perception occurs in a relational way, in which each phenomenon is a network of relationships, and it is through the association of imagination and experiences that science and the apprehension of the world are shaped. To achieve an understanding of your environment and what happens in it, it is necessary to accumulate a wealth of sensory, cultural, political, historical, and social experiences and experiences, which are part of your socio-ecological relationships and represent your knowledge and knowledge in the face of lived reality (Tuan, 1980, 1983).

The perception of actors in the field in relation to climate change shows how an individual identifies, in their daily lives, climate change and the damage caused, helping in the choice of adaptation measures, in decision making, in participation in the formulation of public policies and training practices (Hoffmann, 2011). Thus, the dialectic used in this research helps to facilitate important reflections regarding the climate emergency, and can, based on the perception and awareness of interlocutors, promote understanding and transformation, to guarantee the sustainability of family farming in the face of climate change (Vasconcellos, 1992).

Methodological Processes

This is a descriptive and qualitative research with a hermeneutic phenomenological basis, in which data collected from theoretical and empirical information are studied through Content Analysis (Bardin, 2016). Qualitative research works “with a universe of meanings, motives, aspirations, beliefs, values and attitudes, which corresponds to a deeper space of relationships, processes and phenomena that cannot be reduced to the operationalization of variables” (Minayo, 1994, p. 21-22, our translation).

Hermeneutic phenomenology, according to Gadamer (2002), seeks to interpret and understand behaviors and concepts based on the analysis of language, movements and meanings, using a different bias from essentialist methodologies. Heidegger (1998) adds that the being brings in his speech and his arguments his experience, the place where he is inserted, his history, and understanding this existence depends on flexibility and exchange of knowledge.

Therefore, Content Analysis (Bardin, 2016) was used along with this base to extract information and analyze this communication. This method follows 3 phases to collect and process data: 1) Pre-analysis, in which the literature related to the study topic is reviewed and the collected material is prepared; 2) Exploitation of the Material, in which the decisions made in the pre-analysis, involving the categorization and identification of relevant themes and patterns; and 3) Treatment of Results, whose significant findings are presented, including descriptions, inferences and interpretations.

The study was carried out in the western region of Paraná (Brazil), covering an area of 22,851km^2, and in the region of Galicia (Spain), of 29,575 km ^{2}. For the research, data were collected from the municipalities of Cascavel, Foz do Iguaçu and Toledo, located in the state of Paraná. The three cities are the most important urban centers and economically guide the region, which is practically based on agriculture and agroindustry. While in Galicia, the data was collected in small villages around Santiago de Compostela, namely: A Estrada, Cerdedo, Padrón and Rois, whose agricultural activity belongs to the identity of these Galicians. Data were collected from a sample of 40 family farmers from three Brazilian cooperatives (Copcraf, Coafaso and Cofatol) and the Sindicato Labrego Galego, 10 farmers from each place, through a semi-structured interview, based on 21 questions, with the majority were open, and non-participant observation, with the help of a field diary and photographic records.

The interviews were carried out *on site* between March and November 2022. The conversations were recorded in audio, via mobile device and later, this content was transcribed into individual files, using Microsoft Word *software*. The Galicians' speeches were translated into Portuguese by the authors.

For ethical reasons, the names of the participants were suppressed, being represented by cardinal numbers when necessary. This was also agreed with the interviewees. Furthermore, the objective and importance of their participation in the research were informed, with the rural producers' consent signed in a Free Informed Consent Form, made available before the interviews began.

Results and discussion

Socioeconomic profile of farmers

The importance of considering aspects such as income, property size, productive diversity, ties with the land and experience in the field, as observed in Table 1, are fundamental to understanding the living and working conditions of farmers, as well as their perceptions, practices and adaptation and innovation strategies. It is possible to identify inequalities and disparities that directly influence agricultural and rural dynamics (Van Der Ploeg, 2009).

Table 1 – Socioeconomic profile of participating farmers.

Feature	Category	Cascavel	Foz do Iguaçu	Toledo	Galicia
Sex	Feminine	4	7	6	6
	Masculine	6	3	4	4
Age range	Up to 30	-	-	-	-
	31 – 45	4	2	4	4
	46 – 60	4	6	6	5
	Over 60	2	2	-	1
Education	Incomplete elementary education	5	4	2	-
	Complete primary education	1	1	1	2
	Incomplete high school	-	1	1	-
	Complete high school	2	2	4	4
	Incomplete higher education	-	-	-	-
	Complete higher education	2	2	2	4
Family monthly income in minimum wages	1 to 3	8	5	5	9
	4 to 6	2	4	4	1
	7 to 9	-	1	-	-
	10 or more	-		1	-
Property size in hectares	Up to 3	-	8	4	3
	4 to 9	7	-	2	2
	10 to 29	3	1	4	3
	30 to 59	-	1	-	2
Length of experience in the field in years	1 to 9	1	3	3	3
	10 to 19	2	3	3	2
	20 to 39	4	2	2	4
	Over 40	3	2	2	1
Bond with the land	Settlement	9	-	-	-
	Own	1	9	5	8
	Rent	-	1	5	2

Source: Research data, 2023.

In this way, 23 women and 17 men were interviewed, the majority of them aged between 46 and 60 years. In relation to education, it was found that the majority of participants in the western region of Paraná had incomplete primary and secondary education, while in Galicia, there was a greater representation of participants with completed secondary and higher

education. Furthermore, women are increasingly active in the field and the perception gained by women farmers is clear that work in the field, previously carried out primarily by men and only assisted by women, can also be managed by them.

Women, in the context of family farming, in addition to being economically active, contribute to changing other paradigms. This is because your performance brings reflections around you, of social, cultural, economic and political position (Gubert *et al*., 2020), which also help in the perception and action in the face of the Climate Emergency.

It is also clear that the majority of interviewees have a monthly income of 1 to 3 minimum wages and territories of up to 3 hectares. Therefore, any extreme event that affects production generates significant damage to families' livelihoods. In relation to time of experience, the majority of farmers stated that they had between 20 and 39 years of experience in the field, however, it is noteworthy that several individuals remembered that since they were children, they had always helped their parents with field activities. While some recalled it with an air of longing and nostalgia, as that was how they learned to love the land and work, others said that these were difficult times, as they woke up very early every day, regardless of the intense cold or heat, and because they were children, they preferred to be playing or going to school.

Four people, three from Galicia, said they had been working with the land for less than 9 years, as they had other jobs in urban centers and chose to start a new way of living, with a better quality of life. Therefore, ontological relationships were witnessed, in which the subject, through memorial rescue or a new lifestyle, seeks to understand who he is, the origin of his existence and his relationship with that territory.

Regarding the land of the properties visited, the majority have their own land, generally passed from parents to children, making up 57.5% of the total. However, if we add this value to the 22.5% of those who hold the land through settlement, who have already been regularized before the National Institute of Colonization and Agrarian Reform (INCRA) for at least 20 years, it can be considered 80% of the total production units as own land. Thus, we perceive a greater belonging of the subjects to their properties, as well as the nature of what is cultivated and created and how they live in the environment, because as Santos (2007) mentions, there is a feeling of belonging to what belongs to us, establishing in the space they inhabit, their cultures, their histories, their values, their struggles and their achievements, thus being an instrument of political power and identity.

Based on what is presented in Table 1, the data suggest significant socioeconomic heterogeneity in the characteristics of respondents in each region. These disparities can influence farmers' perceptions and practices regarding agriculture and rural development, and must be taken into account when formulating public policies that aim to meet the needs and realities of these specific groups.

Perception of changes in climate

Regarding the interviewees' perception regarding the climate, it was observed that 90% of the 40 interviewees, regardless of whether they were Brazilian or Galician, perceived a worse climate, especially in the last 3 years, while only 10% of them said they did not notice much of a difference. For those who reported not noticing much difference in the climate in recent years, Table 1 shows some statements that represent this understanding.

Table 1 – Understandings of the interviewed rural producers regarding the fact that they do not notice a difference in the climate.

	Farmers' speeches
Related to the fact that they do not perceive relevant differences in the climate	Galician farmer 1: *" I don't notice much difference in the climate. Now they say it's hotter, but I remember when I was little my mother would go to collect the weed and I would go along and it was already very hot, I remember her complaining that it was very hot. The weather is always unstable, sometimes it gets better, then it gets worse.* Brazilian farmer 1: " *I don't notice much, for me everything is kind of the same. Of course, the last 2 years have had a greater drought, but in the last 10 years, I don't see much of a difference."* Galician farmer 2: *"Every year is different, one year is drier and the other is not. [ ] There was always a storm and there was always cold or heat. They say that the temperature was very high this year and it hadn't happened in 40 years, but 40 years ago there was a temperature like that and nothing happened."*

Source: Research data, 2023.

Although some producers said that they did not notice significant climate changes in recent years, within this portion, some subjects said that they gave up on some productions, such as milk or vegetables, and started producing other products, or diversified production, or suffered losses in production, as a result from extreme events, especially drought.

At this point, a characteristic revealed by the interviewees stands out, which is resilience, resistance in their daily activities, playing an important role in the construction of new models of rural development. According to Baiardi and Alencar (2015), this resilience and power of adaptation of family farmers is due to their constitutive logic, which has already faced

agricultural revolutions and clashes with revolutionary governments, fighting to ensure that their traditions are not extinguished.

For those who pointed out a worsening of the climate, it was possible to classify this perception into 3 categories: One related to climate imbalance/instability; another related to excessive droughts and droughts; and another to the increase in temperature (Table 2).

Table 2 – Responses representing 3 categories found based on the understandings of the interviewed rural producers regarding the worsening of the climate in recent years.

Categories		Farmers' speeches
1	Related to climate imbalance	Brazilian farmer 2: *"It's gotten worse because now everything is extreme. When it rains, it storms and when it doesn't rain for a long time, when it's cold it's frost, there's no more control, everything is out of control.*" Galician farmer 3: *"The rains were more distributed, now we don't know when it will rain and this year, for example, we went many days without rain, something that never happens in Galicia".* Brazilian farmer 3: *"The climate is more unstable. Sometimes it's summery in winter, cold in summer. This instability is very disruptive."* Brazilian farmer 4: *"In the past, there was a fixed deadline, you got there and planted. Today it's complicated, when now, it's either drought when it's time to plant or it's rain when it's time to harvest, so the climate is out of control."*
2	Related to excessive drought and drought	Galician farmer 4: *"I basically see when I go to the garden that we have a lack of water. Galicia is a very humid place that rains a lot and this is changing a lot, more seriously over the last 6 years, the last 3 then, even more serious".* Brazilian farmer 5: *" I told my old lady that my fear is that this year, we're going to take risks with the garden, but I'm sure we won't have water"* Galician farmer 5: *"We have many springs, but the older people don't remember seeing as little water as some springs now have. They are drying out."* Brazilian farmer 6: *" From 2019 to now, the weather has been very atypical. A lot of drought, little rain, much less than normal."*
3	Related to increased temperature	Brazilian farmer 7: *"Some plants that were planted at a certain time of the year, we have to change the planting time because the temperature is changing".* Galician farmer 6: *"Very uncontrolled temperatures. [ ] This year we had crazy heat. We put the grass to grow and there was almost no growth. [ ] We will have to buy food."* Brazilian farmer 8: *"Today you can see that the heat is increasing, I think it is due to deforestation, right, in the Amazon they hide a lot, but it is always very deforested".* Galician farmer 7: *"It gets hotter and hotter, in the autumn in October, it is usually already frosty, this year the first frost was these days* (November 5th)*. [ ] Before, the heat wasn't so excessive."*

Source: Research data, 2023.

The majority of participants realize that there have been significant climate changes in their production unit, which have impacted production, whether agricultural or livestock. There is great insecurity regarding when to sow and harvest, as well as whether there will be enough water for irrigation or preservation of pastures. These concerns are legitimate, since studies indicate that South America recently suffered from the second worst drought between 2000 and 2020 (Ocha, 2020) and in the last seven years, there has been a record of temperatures above 45 ºC in several parts of the planet, reaching 47.5 ºC in 2017, in Spain (Marques, 2022).

Furthermore, the statements in both regions revealed that the majority of interviewees relate this worsening of the climate: 1) to the increase in deforestation to open areas for livestock and crops, 2) to the pollution caused by pesticides, generally coming from neighboring properties, already that the majority of participants do not use these types of poisons, 3) forest fires, also attributed, often, in a timid way and even expressing fear in speaking, to the owners of large estates for the implementation of pasture and *commodity cultivation*.

Looking deeper, the fear of verbalizing these thoughts demonstrates the strength that agribusiness has over family farming, and the understanding that these three factors have a direct relationship with the objectives of agribusiness, of aiming only for productivity and profit, without paying attention environmental preservation practices. Thus, it is notable that laws and inspections are being readjusted for landowners who produce intensively, causing the greatest damage to the environment, reaching 80% of deforestation in the world (Kissinger; Herold; Sy, 2012).

It was also possible to classify 3 categories of responses about the causes of the climate crisis, namely: 1) Caused by anthropogenic actions, with 70% of responses; 2) Natural cycles that occur normally, with 15% and 3) Natural cycles, but with the contribution of human beings, indicated by another 15% of respondents.

The research shows that, in general, small producers understand that the way human beings live in society has been degrading the planet and creating difficulties in their daily activities. " *Nature is taking revenge on man. Nature is perfect and man was the one who messed with nature, he threw everything out of balance"* (Brazilian farmer 9) and *"God created perfect nature. So human beings had to maintain it, right, but the greed of wanting more and more"* (Brazilian farmer 10), are narratives that demonstrate this.

Despite this understanding, some believe that the responsibility for the greatest damage lies with large producers and agribusinesses, as can be seen in these reports:

> " *We also deforest, but it's survival, the problem is those who deforest in a very large area, mine, sell a lot of wood to be able to make pasture on top"* (Brazilian farmer 11).
>
> *"Family farmers have a little piece of land and stay there, working. Now the big ones, they punish the land and the environment a lot, and the* (public) bodies *turn a blind eye to this. The norm is for the minority"* (Galician farmer 8).

Once again, it reinforces the perception that the greatest damage is caused by large producers and industries, and although they have not spoken about the term "Climate Justice", they know that this inequality exists and that they are the most harmed. In fact, agribusiness, characterized by agriculture and livestock produced on a large scale, contributes significantly to the increase in global warming, through the intensive use of synthetic nitrogen fertilizers, sources of N_2O and large emissions of methane and CO_2, released by animals (Houser; Stuart, 2020; Monteiro *et al*., 2018). In addition to the indiscriminate use of pesticides, especially in Brazil, which in recent years has adopted a policy of flexibility, allowing registration for the use of more than 2 thousand pesticides between 2019 and 2022 (Mapa, 2023).

When analyzing the set of reports, the common issue is the discomfort faced by large intensive production structures. According to them, this model leaves them on the sidelines of the activity, being undervalued and obtaining few benefits from public policies aimed at agriculture. In both countries, during the research period, small and large rural producers were allocated the same condition in terms of public policies, and this means that large producers receive practically all the benefits, such as rural credits, tax exemptions, subsidies for planting and harvesting, among others.

Some farmers explained that the fact that there is only one Ministry of Agriculture and Livestock in Brazil and the PAC (Common Agricultural Policy) in Galicia, serving both small and large producers, harms small producers. *"Because once you put it together, whoever determines is the one who has the most strength"* (Galician farmer 8), is one of the statements that exemplifies this issue. Furthermore, the objectives, cultivation techniques, sales methods, financial resources, land size, differ greatly between the two groups, which justifies the need to have different projects, laws and programs as well.

However, although the CAP still governs the Policies of both types of producers, it was recently reformulated (2023-2027), giving more relevance to organic and sustainable production. In Brazil, the new elected federal government (2023-2026) divided the Ministry, once again having the Ministry of Agriculture and Livestock to serve the interests of agribusiness and the Ministry of Agrarian Development and Family Agriculture, to serve small

producers and cooperatives, whose Budgets are distinct and can strengthen both types of agriculture. It is therefore expected that there will be a recovery of Public Policies aimed at family farming, which were neglected by the PAC and were dismantled in Brazil, during the previous government (2019-2022).

Understanding terms related to the Climate Emergency

Regarding terms such as Global Warming, Natural Disasters and Climate Change, they were asked if they had ever heard of it and if they knew how to explain it in some way, everyone said they had already heard such terms. Some even said that they not only heard about it but also identified the impact on their "own skin". However, the explanations differed basically in three behaviors, as seen in Table 3:

Table 3 – Responses that represent 3 categories found based on rural producers' understandings of terms such as Global Warming, Natural Disasters and Climate Change.

Behaviors		Farmers' speeches
1	Those who defined, in a simple or more elaborate way,	Brazilian farmer 12: *" Because of our actions, climate change is the reaction. It could happen without our action, but the time would take much longer and I don't know if it would be the same way, so as it stands, they are reactions to our actions."* Brazilian farmer 13: *"It's certainly the development model that we adopted. The price we are paying after the green revolution. Large expanses of land and a reduction in legal reserves and riparian forests are causing all of this.* Galician farmer 10: *"And I understand them as terms referring to very bad things. We went from very high temperatures to very cold. The changes are very bad."*
2	Those who said they did not understand or could not explain what they were talking about	Brazilian farmer 14: *"I don't really understand, some say it's deforestation, they deforest to plant crops. It could be air pollution, right? But I can't say. But it could be the poisons, those who plant soy use it a lot and even plant it on the hills, while we here respect the waters and the surrounding forest".* Brazilian farmer 15: *"I would say this, I've heard about it, but I don't know it, I just know that this climate system is only going to harm us. Now what is happening and why, I don't know how to tell you. We only realize that something is happening".* Galician farmer 2: *"I heard about these terms, because they've been talking about it for some time, nothing very in depth* (to be able to explain)*, but I know that climate change is there, because there are things that are no longer like they were when I was 10 years old".*

3	They didn't try to explain, but they used examples	Brazilian farmer 16: *" An example that I paid a lot of attention to about Climate Change, was a flower from my grandmother's time, called Christmas flower, it only opened on Christmas Day, I was a child and I was waiting for it to open, because It was only on Christmas Day. Do you know when it opens now? It starts opening in October, November, it's out of time, it's opening outside of its opening date, which was the 25th, exactly. So, if we pay attention, we see a lot of difference that the climate is changing."* Galician farmer 4: "They (the terms) *exist. In Galicia we lived by season, in the past it started to rain in November and until March, April, it didn't stop. The earth was always damp. Now there are torrential rains, you take the land and it is dry".*

Source: Research data, 2023.

Although it is possible to classify the statements, in general it is noted that there is a difficulty in understanding not only the definition of these terms, but also the gravity of their relationship with planetary life. Many interviewees made short and long pauses before answering, demonstrating insecurity and doubts, however, the question functioned as a moment of reflection on the topic and the insertion of human beings in their environment, contributing to fostering the construction of perspectives on the uncertainties of the climate future.

Some participants claimed that they work a lot and don't have time to find out about the subject, others commented that there is a lack of information in popular media and that's why they didn't know how to explain it. It is also clear that information or lack of information often generates mistaken understandings in relation to what science shows, and this can be observed in the following reports:

> *"For example, what does it have to do with the Amazon burning there, will it affect it here? These fights between countries over the Amazon, what will affect them far away? I don't think that deforestation in the Amazon influences the climate, perhaps those who study it say yes, but I don't think so"* (Brazilian farmer 17).
>
> *"I didn't really learn this, but they say that even animals emit harmful gases, right? I think carbon dioxide. I don't know if it's in the manure, but that's a bad effect, right?"* (Brazilian farmer 18).
>
> *"We realize that the sun is hotter, we are afraid of the future, which could get worse, because what is already causing people a lot is skin cancer. [ ] The heat has been much hotter for a few years now"* (Brazilian farmer 19).

This topic raises the alarm that data and information about the Climate Emergency that we are experiencing require the decentralization of scientific and management resources, being passed on to the entire population through facilitated language.

Demands and relevant points about the two regions

In relation to the demands raised by interviewees from both countries and distinct characteristics found in the researched regions (Table 4), it is possible to identify the gaps and limitations that allow for deeper discussions in order to improve educational interventions and proposals to have Public Policies of effective protection and sustainability.

Table 4 – Demands divided by similarity, by region and poorly scored.

	Demands presented by small farmers
In both regions	• Lack of agricultural and/or veterinary technical assistance • Need to reduce bureaucracy to access Public Policies • There is a lack of interest in small producers, as there are in large • Need to improve supervision over the use of poisons • Need to strengthen dialogue between people and government • There is a lack of incentive (financial and emotional) for the farmer to stay in the field • Lack of insurance to cover small production
Western Region of Paraná (Brazil)	• Lack of assistance with inputs (fertilizer, seeds, seedlings) and machinery • Need to improve lines of credit and financing for small production • Projects that already exist on paper remain to be carried out • Courses and training are needed for quality production and damage mitigation
Galicia Region (Spain)	• Lack of efficient public policy specific to family farmers • Lack of (Environmental) Education and awareness of sustainability, food quality, production system • Need to increase payment for the product offered • Lack of appreciation for field agents • Lack of information, both for the farmer and for society, about Climate Change and ecological products • Lack of assistance with sales and product promotion
Demands presented by few producers, but pertinent	• Roads need to be fixed to transport the product • Lack of collective attitudes such as field day and union of cooperative members • Need structural improvements in settlements and for marketing products • Lack of projects and programs on Climate Change in the field • Lack of partnership with universities for the use of laboratories for soil and water analysis • Lack of demand from the urban public for quality products and origin on the market • Need to dissociate the conditions of rural producers (small and large) in relation to the PAC/ministry

Source: Research data, 2023.

The analysis of demands reveals a convergence of concerns that reflect the scarcity of financial resources, the difficulty in accessing managers and decision makers, the discrepancy in treatment between small and large farmers by society and public authorities, the different necessary requirements (of which they hardly qualify) to have access to Public Policy subsidies aimed at field agents and other adversities faced by the researched group.

There are also specific demands for each region. In Western Paraná, there is a clear emphasis on the need to improve lines of credit and financing for structural improvements to the property, the lack of free courses and training, the insufficiency of technical assistance that was provided by the government until 2021, as well as the inefficiency in execution of existing projects. It can be seen that in Brazil there is a great dependence on the government so that they can manage and maintain family farming.

Often the lack of financial, technological and infrastructure resources and the difficulty in competing with large food companies means they need this support from the government, but this does not take away from the fight for autonomy of these social actors, it is just an impulse to achieve the desired rural development (Schneider, 2009).

On the other hand, in Galicia, they highlight the lack of assistance for the marketing and dissemination of their products and the low value they receive for them, thus, factors related to not having efficient Public Policies for small producers. Furthermore, they point out the lack of environmental awareness and information about climate change and ecological products, especially on the part of consumers. In this context, the importance of Public Policies that value these farmers' products is understood, as well as the need for more conscious consumers to guarantee the population's food and nutritional security. According to Van Der Ploeg (2009), family farmers often have their products undervalued due to the concentration of power of the "Food Empires".

It is noted that the relevant demands expressed by a small number of producers indicate fundamental issues that deserve attention and action by authorities and other groups involved in the agricultural sector. In addition to highlighting the importance of partnerships and better organization of cooperative members and union members.

From a critical point of view, the data in Table 4 highlights the existence of common challenges faced by small farmers in different regions, but also highlights the need for specific and contextualized approaches according to local particularities and needs. By observing the demands, it was possible to highlight in a more concise way, distinct points between the regions researched (Table 5).

Table 5 – Distinct points between the regions surveyed.

Western Region of Paraná (Brazil)	Galicia Region (Spain)
They focus more on requiring courses and training to improve learning about production techniques	They focus more on learning from their parents and grandparents about how to work in the field
They are more dependent on the government	They prefer not to have to depend on the government
They have precarious roads to take products for sale, but they have government programs that help with the flow of production.	They have better-maintained roads for transporting products, but encounter difficulties in marketing
They produce for subsistence, but the main focus is for sale	They produce for sale, but the main focus is for subsistence
Many cultivate and raise animals without major damage mitigation strategies	Many have strategies such as greenhouses and stalls to mitigate damage
They report that they are invisible within society and before governments	They report that they are frowned upon by society and governments

Source: Research data, 2023.

It is noted that in Western Paraná, farmers have a great interest in improving learning and seek to acquire updated knowledge to improve their skills in the field, while in Galicia, they value and trust the learning transmitted by previous generations, who shared their experiences and knowledge about working with the land.

According to Barbosa (2020), this biocultural memory contributes to more sustainable agriculture, as it is expressed by the preservation of native seeds, natural soil management, conscious use of water, recovery of ecological practices, which are part of this ancestral wisdom, which goes beyond the knowledge of books and reinforce existential roots. However, recognizing the preciousness of the knowledge of traditional people and adding it to new scientific knowledge can result in the reduction of environmental impacts (Caporal, 2009), in the two regions studied.

Regarding dependence on the State, the majority of Galicians show resistance to depending on subsidies from the Common Agricultural Policy (PAC) because they realize that they are distributed disproportionately, benefiting large producers and agricultural companies to the detriment of small ones, in addition to If they meet the Policy's requirements, they would have to adopt modern intensive agricultural techniques that the PAC encourages, having to give up their traditional practices that make them have a strong connection with the land and the region's agricultural tradition. These arguments corroborate studies carried out on the subject (Hernández, 2015; Miranda; Fiúza; Fernández, 2021), however it is highlighted that the new PAC, applicable from 2023, provides for improvements to small farmers and incentives for sustainable agriculture (Council of European Union, 2023).

According to Table 5, in Brazil, the commercialization of products is facilitated mainly by two Public Food Security Policies (Food Acquisition Program – PAA and National School Meal Program – PNAE) that allocate food from family farming to schools and people in situations of food and nutritional insecurity. In Galicia, the fact of having to go after consumers in markets and open-air fairs and the low price paid for the products were cited as factors that make marketing difficult. However, it can be seen that production for commercial purposes coexists with food for self-consumption, to a lesser or greater extent in both locations, and this is due to the conditions of the regions.

From observations carried out on the properties visited, it is noted that although both regions use strategies to mitigate the risks of similar socio-environmental disasters, such as irrigation systems and agroforestry, in Brazil the strategies are generally simpler, such as the use of water tanks such as cisterns, shade cloths and straw for soil cover, while in Galicia, several production units had plastic greenhouses for protected cultivation, closed bays and anti-weed blankets for soil cover.

Some Brazilian farmers report their desire to install greenhouses on their property because they believe it to be one of the best strategies against climate adversity, but for financial reasons they have not yet done so, including because the National Policy for Strengthening Family Farming – PRONAF, which provides financing for infrastructure funding and investments for rural establishments was suspended during the administration of the last government (2019-2022) (Bndes, 2019).

In the last topic in Table 5, it is noted how the interviewees feel and understand their image and existence in the society of which they are part. There was a discouragement in the gestures and speeches of these subjects when expressing that they perceive themselves as invisible or frowned upon by society and the Public Power.

In the work of Pollnow, Caldas and Anjos (2023), a farmer from Spain chose the same term to say that *"agriculture in the country has always been frowned upon"*, attributing it to the fact that they relate it to people without studies. He says that although this reality has changed a lot, they continue to see farmers as illiterate, this being the same justification given by a farmer from Galicia, in the present study. In Brazil, according to those interviewed, what motivates the invisibility of family farmers is the overvaluation of agribusiness.

Based on this perception, urgent changes are necessary in this area to strengthen workers in this segment, because regardless of the level of education or landowners, these are the characters who produce the majority of the food consumed, fundamental to the life of every

human being. The rescue and appreciation of the farmer's identity is the recognition of the importance of their work and contribution to society, promotion of cultural diversity, preservation of local traditions, in addition to ensuring the survival of these families (Schneider, 2009; Wanderley, 2000).

Finally, differences in approaches, perceptions and realities experienced by family farmers according to their locations stand out. These differences can be influenced by socioeconomic, cultural, geographic and political factors, specific to each region. However, the struggle of these workers to improve their living conditions in the countryside, keep their history alive and develop more sustainable agriculture is understandable.

Therefore, production and consumption models must be rethought so that they are sustainable and conscious, promoting Environmental Education inside and outside schools, due to the urgency of the crisis, valuing the traditional wisdom of these people, who resist producing quality food and in a sustainable manner, given the various challenges encountered. Eichenberger, Moser and Campos (2022, p. 14, our translation) emphasize the need to think about a period of transition, with strategies for energy, social, consumption and food issues, in order to "fill the invisible gaps that connect everyday life with climate change and propose quick and effective alternatives" for society.

Final remarks

Within the investigative conditions of intersubjectivity, created between farmer-researcher, it is understood that there is a high level of perception of climate impacts and changes, mainly in relation to climate instability, the decrease in water precipitation patterns and the increase in temperature, as well as that the central cause is human action, even in regions with different edaphoclimatic and cultural conditions, such as the western region of Paraná and Galicia.

At the end of the content analysis, it is also understood that they are aware of their realities, challenges and limitations. The demands presented reflect the concern with environmental sustainability and rural productivity, the need to give protagonism and voice to these social actors, awareness and active participation of different sectors of society in production systems and before public bodies.

In this way, to improve understanding of the severity of this crisis and consequently, mitigation and adaptation practices, it is possible to link this valuable empirical and tacit

knowledge to scientific knowledge, through Critical and transformative Environmental Education programs and projects, aimed at these social actors in order to contribute to the recovery of the potential and importance of these traditional peoples, in the exercise of their citizenship with public bodies, both to demand and to show the reality and relevance of life in the countryside, so that the Public protection and assistance policies are created and exercised in both countries. As well as strengthening ties between farmers and other citizens, creating better food and environmental awareness in favor of food security.

Finally, there is a need to expand studies on mitigation and adaptation strategies in the field, as the Climate Emergency is causing increasing damage to agriculture, as well as the need to expand research with an approach focused on public bodies and legislators. Thus, it is believed that opening space so that government, civil society and researchers can act together in the development of Environmental Education and Public Policies activities is essential to create awareness of an entire environment that works from the interconnection of all living organisms and truly efficient Policies, towards a more balanced environment for society as a whole.

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