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ORIGINAL

Perception Of Climate Variability In The "El Reflejo" Property Of Florencia-Caquetá: Affections And Adaptations

Percepción De La Variabilidad Climática En El Predio "El Reflejo" De Florencia-Caquetá: Afectaciones Y Adaptaciones

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ABSTRACT

Introduction: climate variability seriously affects agriculture, especially in Caquetá. This problem has impacted essential local agricultural activities.
Objective: this study analyzed the perception of the owners of the El Reflejo property regarding climate variability. Method: The research, with a qualitative and descriptive approach, through a semi-structured interview with a key informant.
Results: a focus on the relationship with the land and climatic factors that affect the agricultural process is suggested. Climate variability is perceived as a challenge to the sustainability of its activities, generating an emotional response that influences decision-making and adaptive strategies.
Discussion: these emotions, although they reflect a feeling of helplessness in the face of the external causes of climate change, drive the adoption of adaptive measures, such as the conservation of water resources. These emotional responses, essential for resilience, can limit the effectiveness of strategies without adequate support.
Conclusions: the climate perception on the property focuses on temperature and rainfall, given their direct impact on production processes. Adaptation strategies arise in response to the adverse effects of climate, which affect productivity and product quality, impacting the local economy.

Keywords: Climate; Environmental Security; Farmer; Sustainability.

RESUMEN

Introduction: la variabilidad climática afecta gravemente la agricultura, especialmente en Caquetá. Esta problemática ha impactado actividades agrícolas locales esenciales.
Objetivo: este estudio analizó la percepción de los propietarios del predio El Reflejo sobre la variabilidad climática.
Método: la investigación, de enfoque cualitativo y descriptivo, mediante una entrevista semiestructurada a informante clave.
Resultados: se sugiere un enfoque en la relación con la tierra y los factores climáticos que afectan el proceso agrícola. Se percibe la variabilidad climática como un desafío a la sostenibilidad de sus actividades, generando una respuesta emocional que influye en la toma de decisiones y estrategias adaptativas.
Discusión: estas emociones, aunque reflejan una sensación de impotencia frente a las causas externas del cambio climático, impulsan la adopción de medidas adaptativas, como la conservación de recursos hídricos. Estas respuestas emocionales, esenciales para la resiliencia, pueden limitar la eficacia de las estrategias sin un soporte adecuado.
Conclusiones: la percepción climática en el predio se centra en la temperatura y las lluvias, dado su impacto

directo en los procesos productivos. Las estrategias de adaptación surgen como respuesta a los efectos adversos del clima, que afectan la productividad y la calidad del producto, repercutiendo en la economía local.

Palabras clave: Campesino; Clima; Sustentabilidad; Seguridad Ambiental.

INTRODUCTION

Climate variability, characterized by changes in weather patterns such as extreme temperatures, erratic rainfall, and severe weather events, has become a global challenge that profoundly affects agricultural systems. In Latin America, the impact is particularly noticeable, where agriculture, a fundamental pillar of many economies, faces significant risks due to climate change.[1] According to Ocampo[2] and Zamora,[3] the increase in extreme weather events, such as prolonged droughts and more intense hurricanes, has jeopardized the sustainability of rural livelihoods.

In Colombia, the Caribbean and Andean regions have suffered the effects of phenomena such as El Niño and La Niña, which alter rainfall and drought cycles, affecting agricultural productivity and generating significant economic losses.[4] Despite government efforts to implement adaptation policies, studies such as that by Lau et al.[5] highlight that many farmers do not have the resources or knowledge to cope with these fluctuations. This situation is particularly critical in rural Caquetá, where climate variability has significantly impacted agricultural and livestock activities, which are essential for the subsistence of the local population.[6,7]

The El Reflejo farm, located in Florencia, Caquetá, is a relevant case study. Farmers have observed significant climate changes affecting agricultural productivity and soil quality. Previous studies, such as those by Sánchez et al.[8], highlight the relationship between unsustainable management practices, climate change, and soil fertility loss. However, the perceptions and responses of landowners to these changes are poorly understood.

This study aims to analyze the perceptions of the owners of the El Reflejo property regarding climate variability, its main impacts on their productive activities, and the adaptation strategies implemented. By exploring these dynamics, we seek to contribute to formulating more effective and contextualized adaptation strategies that will enable rural communities to face the challenges of climate variability better.

METHOD

Location

The research was conducted on the El Reflejo farm in El Quindío, El Caraño district, in Florencia, Caquetá (Colombia). Geographically, the property is located at 1°42'26'' north latitude and 75°38'48'' west longitude, at an average altitude of 730 meters above sea level. The region, part of the Colombian Amazon, is characterized by a humid tropical climate with high rainfall and warm temperatures throughout the year. These climatic conditions and the area's vulnerability to climate variations provided a suitable context for investigating the inhabitants' perceptions of climate variability.[9]

Population and sample

The study population consisted of the owners of the El Reflejo farm, who have dedicated more than 20 years to the production of panela as their main economic activity. In addition, they grow bread products using traditional practices in the region. Two key informants, the owners, were selected based on their long-term presence on the farm and their participation in production decisions.

Methodological approach

The research was conducted under a critical social paradigm, the purpose of which was to describe the participants' perceptions and encourage critical reflection that would enable them to face the challenges and inequalities associated with climate change.[10]

The descriptive design allowed for a detailed description of the characteristics and properties of the owners' perceptions of climate variability. This approach was appropriate for accurately tracing and understanding the participants' experiences and realities.[11] A qualitative approach was also used, which facilitated in-depth exploration of the landowners' subjective interpretations, experiences, and adaptation strategies, capturing the contextual complexities that a quantitative approach would not have been able to capture.[12]

Method

In addition, semi-structured interviews were conducted with landowners to gain insight into their views on climate variability. This interview format provided a flexible and open space that facilitated the expression of perceptions, feelings, and concerns related to climate change. The semi-structured methodology was beneficial

for exploring emerging issues during the conversation, allowing for a deeper understanding of individual perspectives.

These combined techniques provided a comprehensive understanding of the perceived effects, personal perceptions, and adaptation strategies developed on the El Reflejo property.

RESULTS

Exploratory analysis

The first result of the survey conducted to understand the perception of climate variability on the El Reflejo property was obtained, highlighting the most relevant concepts for the owners, represented in the word cloud (figure 1).

Figure 1. Word cloud, relevant concepts in survey

The most prominent terms were land, change, tomorrow, cane, and sun, suggesting a sentiment centered on working the land and the factors involved in the process. Other associated terms such as future, fertilize, Caquetá, time, and climate indicate recognition of the particular conditions of the environment and the impact of critical factors on the daily management and future of the land. This shows that landowners perceive climate variability as a factor that challenges the sustainability of their agricultural activities, generating uncertainty about the future and leading them to develop adaptation strategies[13] that must be evaluated.

Concept of climate impact recognition (network diagram)

The network diagram (figure 2) shows how the climatic factors of temperature and rainfall, key elements perceived by the respondent, have a significant effect on multiple dimensions of farm management, both in terms of agricultural productivity and in terms of emotions and decisions made, given that they directly impact crops.

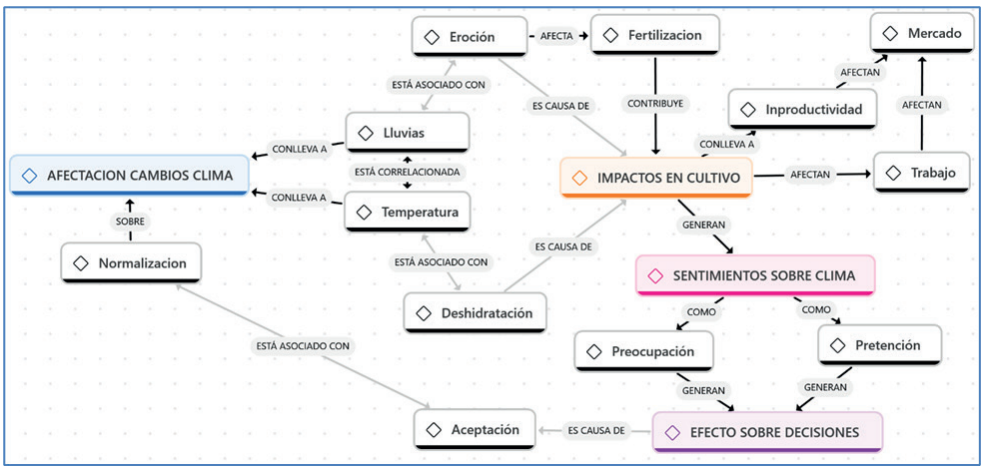

Figure 2. Network diagram, climate impact recognition

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In this way, when landowners experience the impacts of climate on their crops (dehydration, erosion, loss of fertility, etc.), they develop an emotional response that combines concern and an intention to protect their land (which, incidentally, is the central theme presented in Figure 1). Authors such as Maqueira et al.[14] and Viguera et al.[15] show that smallholder farmers, when faced with phenomena such as erosion, loss of fertility, and other climate effects, develop an emotional response that combines concern with a motivation to protect their land. These perceptions and feelings directly influence management and adaptation decisions in the face of climate variability and how climate variability is perceived on the farm.

Impacts and perception of climate change (Sankey diagram)

The Sankey diagram (figure 3) illustrates the interrelationships between the various aspects of climate change on the farm.

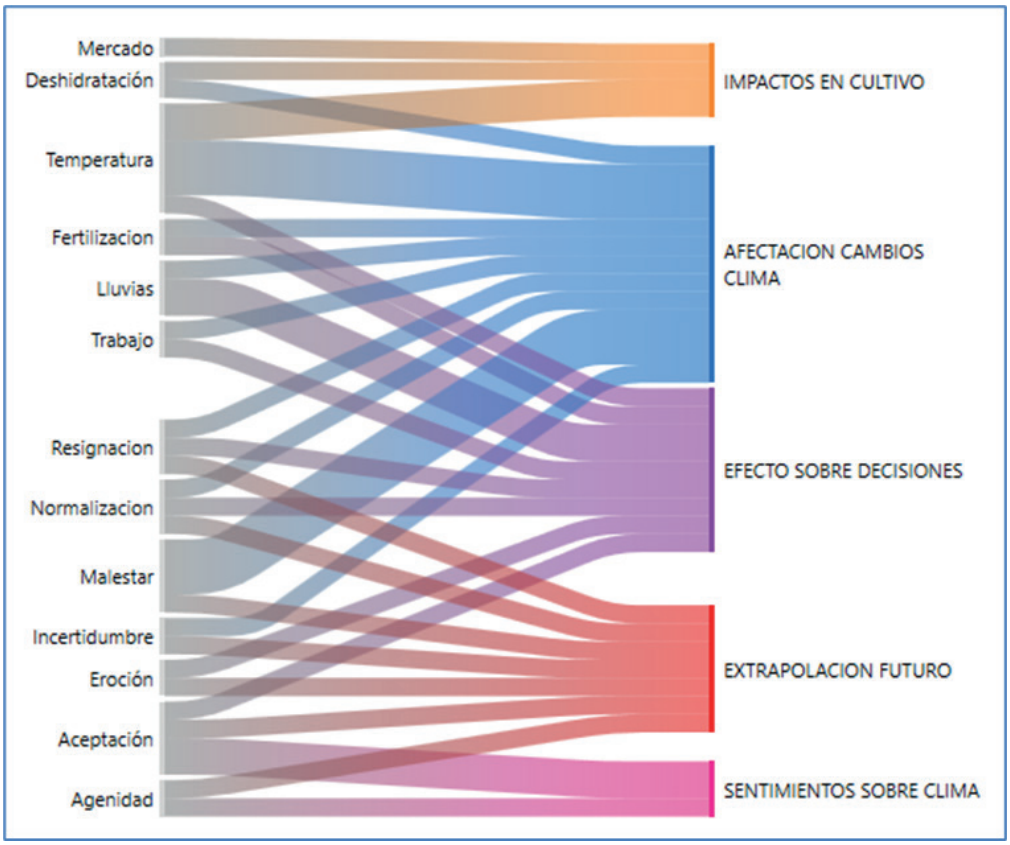

Figure 3. Sankey diagram, impacts and perception of climate change on the property

The temperature factor directly impacted crops and was also the main factor affecting economic aspects (market) related to product quality. Other notable factors, such as rainfall and feelings of discomfort due to the weather, converge as consequences of the effects of climate on the property. The latter also has a psychological dimension expressed in feelings of acceptance and resignation about adverse events.[16]

These feelings affect property decision-making and generate a dramatic view of the future among landowners. This suggests that, given their acceptance of climate circumstances, which they perceive as beyond their control, adaptive measures are taken, with erosion appearing to be a factor that generates long-term concern about activities that depend on the soil.

For his part, Poma[17] emphasizes that emotions such as helplessness and resignation are common in communities facing climate change. These emotional responses not only reflect the perception of the magnitude of the problem but also limit the effectiveness of adaptation strategies, as individuals feel overwhelmed by the escalating challenges.

CONCLUSIONS

The relevance of temperature and rainfall indicates that these issues are the most discussed regarding climate perception. Other terms revolve around how rainfall and temperature relate to production processes.

Adaptation strategies arise from dissatisfaction or discontent with climate impacts, whether direct or indirect. Furthermore, impacts on crops have economic consequences, compromising productivity and product

quality.

Although there is a perception of alienation regarding the causes of climate change, some aspects of environmental conservation focused on water sources are recognized, as well as a pressing need to act in the face of a changing environment.

BIBLIOGRAPHICAL REFERENCES

1. Comisión Económica para América Latina y el Caribe (CEPAL). Acerca del cambio climático. https://www.cepal.org/es/temas/cambio-climatico/acerca-cambio-climatico

2. Ocampo O. El cambio climático y su impacto en el agro. Rev Ing [Internet]. 2011;(33):115–23 [citado 2025 mar 31]. Disponible en: http://www.scielo.org.co/pdf/ring/n33/n33a12.pdf

3. Zamora MC. Cambio climático. Rev Mex Cienc For [Internet]. 2015;6(31):4–7 [citado 2025 mar 31]. Disponible en: https://www.scielo.org.mx/scielo.php?pid=S200711322015000500001&script=sci_arttext

4. Costa C. La adaptación al cambio climático en Colombia. Rev Ing [Internet]. 2007;(26):74–80 [citado 2025 mar 31]. Disponible en: http://www.scielo.org.co/scielo.php?pid=S0121-49932007000200010&script=sci_arttext

5. Lau C, Jarvis A, Ramírez J. Agricultura colombiana: adaptación al cambio climático. CIAT Polít Síntesis. 2011;(1):1–4.

6. Solarte A, Zapata C, Rivera M, Gómez Á. Sistemas agrosilvopastoriles en el Caquetá, Colombia. Seguridad alimentaria y resiliencia al cambio climático. LEISA Rev Agroecol. 2017;33(2):24–6. https://www.leisa-al.info/index.php/journal/article/view/144

7. Hurtado HI, Londoño T, Salazar KD, Sánchez V. Identification of learning styles in agricultural producers of the productive sectors in the department of Caquetá. Multidiscip (Montevideo). 2023;1:1–11. https://doi.org/10.62486/agmu202374

8. Sánchez M, Mestanza-Ramón C, Sánchez I. Perspectiva de conservación del suelo en la Amazonía ecuatoriana. Green World J. 2020;3(2):12. https://www.greenworldjournal.com/doi-022-gwj-2020

9. Nobre CA, Sampaio G, Borma LS, Cardoso M. Riesgos del uso del suelo y del cambio climático en la Amazonía y la necesidad de un nuevo paradigma de desarrollo sostenible. Proc Natl Acad Sci U S A. 2016;113(39):10759–68. https://doi.org/10.1073/pnas.1605516113

10. Borda OF. Por la praxis: el problema de cómo investigar la realidad para transformarla. Espac Abierto. 2022;31(1):193–221.

11. Nassaji H. Qualitative and descriptive research: data type versus data analysis. Lang Teach Res. 2015;19(2):129–32. https://doi.org/10.1177/1362168815572747

12. Yin RK. *Case study research: design and methods*. 4th ed. Thousand Oaks (CA): SAGE; 2009.

13. Viguera B, Alpízar F, Alice-Harvey C, Rodríguez MM, Rodríguez MS. Percepciones de cambio climático y respuestas adaptativas de caficultores costarricenses de pequeña escala. Agron Mesoam. 2019;30(2):333–51.

14. Maqueira YM, Sal AG, Barrio EMC, Barrio AMC, Díaz-Maroto IJH. Respuestas adaptativas de comunidades campesinas ante los efectos del cambio climático, Parque Nacional Viñales. Avances. 2020;22(3):373–87.

15. Viguera B, Alpízar F, Alice-Harvey C, Rodríguez MM, Rodríguez MS, Contreras L. Percepciones de cambio climático y respuestas adaptativas de pequeños agricultores en dos paisajes guatemaltecos. Agron Mesoam. 2019;30(2):313–31.

16. Clayton S. Psicología y cambio climático. Pap Psicol. 2019;40(3):167–73.

17. Poma A. El papel de las emociones en la respuesta al cambio climático. Inter disciplina. 2018;6(15):191–214. https://doi.org/10.22201/ceiich.24485705e.2018.15.63843

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

CONTRIBUTION OF AUTHORSHIP

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