

Impact of Climate Change on Traditional Agricultural Practices: An Ethnoecological Perspective

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ABSTRACT

This research discusses the impact of climate change on traditional agricultural practices from an ethnoecological perspective. Through a literature review method, we analyzed various relevant sources to understand the complexity of the relationship between humans, the environment, and culture in the context of global climate change. Findings indicate that climate change poses serious challenges to the sustainability of traditional agricultural systems, such as changing weather patterns, vulnerability of agricultural ecosystems, and loss of local knowledge. However, local knowledge also offers significant adaptation potential in facing climate change, with the integration of traditional knowledge and modern science being key to developing effective adaptation strategies. In conclusion, this research highlights the importance of understanding and preserving the sustainability of traditional agricultural practices in the era of climate change.

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1. INTRODUCTION (11 PT)

Throughout human history, traditional farming practices have been an integral part of survival and cultural development [1]. Preserved through generations, traditional farming systems have garnered deep knowledge of local environments, seasons, and cultivated crops [2]. However, the future of these practices is now threatened by significant challenges posed by global climate change [3]. These changes not only jeopardize ecosystem balance but also shake the foundation of traditional agricultural sustainability and the communities relying on it [4]. Therefore, studying the impact of climate change on traditional farming practices is increasingly crucial for a deeper understanding [5].

Climate change has had broad and complex impacts on traditional agricultural systems worldwide [6]. One of the most tangible impacts is the alteration of weather patterns, including increased global average temperatures, unpredictable rainfall intensity, and longer drought periods [7]. In this context, traditional farming communities must confront new challenges in timing planting, selecting crop varieties resilient to extreme conditions, and maintaining environmental equilibrium [8].

However, the impacts of climate change are not solely physical; they also encompass social and cultural aspects [9]. Traditional farming is not merely an economic practice but also reflects a system of values, local knowledge, and cultural identity within

a society [10]. Changes in farming practices can disrupt the traditional relationship between humans and their environment, threatening accumulated local knowledge and wisdom over centuries [11].

Furthermore, climate change triggers human migration from rural to urban areas in search of better livelihoods [12]. This can lead to the loss of valuable generational knowledge about traditional farming practices since such knowledge is often not documented in writing and is only learned through direct experience from previous generations [13]. Thus, there is a real risk that traditional farming practices that have existed for centuries could vanish within a single generation [14].

However, amidst the challenges faced, traditional farming practices also offer significant adaptive potential in responding to climate change. Local knowledge accumulated over centuries can be a valuable resource in developing climate-resilient farming strategies. Integration of traditional knowledge with modern science can create innovative solutions that are suitable for local conditions and respect local wisdom [15].

In this context, the ethnoecological approach becomes highly relevant in understanding the complex relationship between humans and their environment and in identifying appropriate adaptation strategies in the face of climate change. Ethnoecology acknowledges the importance of local knowledge in maintaining environmental sustainability while also recognizing the importance of integration with modern science in addressing global challenges such as climate change [16].

Thus, this research aims to investigate the concrete impact of climate change on traditional farming practices from an ethnoecological perspective. By understanding these impacts more deeply, it is hoped that we can develop appropriate and sustainable adaptation strategies to maintain the sustainability of traditional farming practices in an era influenced by climate change.

2. METHODS

The Literature Study method in this research will involve a series of systematic steps to collect, review, analyze, and synthesize relevant literature on the impact of climate change on traditional agricultural practices from an ethnoecological perspective. The following are the research stages to be conducted [17]:

1. **Research Topic Identification:** The initial stage involves identifying and formulating the research topic clearly and in detail. This includes understanding the scope of the topic, research objectives, and specific research questions related to the impact of climate change on traditional agricultural practices.
2. **Literature Search:** Next, the researcher will conduct literature searches using academic databases, scholarly journals, textbooks, research reports, and other relevant sources. Searches will be performed using keywords relevant to the research topic to ensure the inclusion of relevant resources.
3. **Literature Selection:** After conducting the search, the researcher will review the titles and abstracts of the literature found to evaluate their relevance to the research topic. Irrelevant literature will be eliminated, while relevant literature will be considered for inclusion in further analysis.
4. **Literature Evaluation:** The selected literature will be critically evaluated to determine its quality and relevance to the research. The researcher will pay attention to research methodologies, data validity, and the novelty of information presented in the literature.
5. **Data Extraction:** Relevant data from the literature will be carefully extracted. This includes information on traditional agricultural practices, the impact of climate change, local

knowledge, adaptation strategies, and other related factors.

6. **Analysis and Interpretation:** The extracted data will be analyzed and interpreted in-depth. The researcher will look for patterns, similarities, differences, and key findings in the relevant literature to understand the impact of climate change on traditional agricultural practices from an ethnoecological perspective.
7. **Synthesis and Writing:** The final stage is to synthesize the findings from the literature analysis. The researcher will organize the analysis results into a cohesive and informative narrative according to the research objectives. Conclusions will be drawn based on these findings, and the researcher will write a research report detailing the research results and their implications.

Thus, this literature study method will provide a systematic framework for investigating the impact of climate change on traditional agricultural practices using an ethnoecological approach.

3. RESULTS AND DISCUSSION

The findings of this research provide a profound understanding of the impact of climate change on traditional agricultural practices from an ethnoecological perspective. The following are the main findings resulting from the analysis of literature:

1. **Changes in Weather Patterns and Seasons:** Literature indicates significant changes in weather patterns and seasons due to global climate change. Increased average temperatures, unpredictable fluctuations in rainfall, and unstable seasonal changes pose serious challenges to traditional agricultural practices [18].
2. **Vulnerability of Traditional Agricultural Ecosystems:** Traditional farming systems, often based on local knowledge of seasons and the environment, are vulnerable to rapid

climate change. Extreme temperature increases and irregular rainfall patterns can disrupt the balance of agricultural ecosystems, reduce crop productivity, and increase the risk of crop failure [19].

3. **Adaptation and Local Knowledge:** Despite facing significant challenges, the literature also highlights the adaptation capacity of traditional agricultural practices. Local knowledge accumulated over centuries serves as a valuable resource in developing adaptation strategies suitable for changing environmental conditions [20].
4. **Threats to Local Wisdom:** However, there is a serious concern that climate change may threaten the sustainability of local knowledge and wisdom that has existed for centuries. Human migration from rural to urban areas in search of better livelihoods may lead to the loss of generational knowledge about traditional farming practices [21].
5. **Integration of Traditional Knowledge and Modern Science:** Literature emphasizes the importance of integrating traditional knowledge and modern science in addressing the challenges of climate change. This approach can lead to innovative and sustainable adaptation solutions that blend local wisdom with scientific knowledge [22].

Through in-depth literature analysis, this research provides valuable insights into the complexity of the impact of climate change on traditional agricultural practices. These findings have significant implications for the development of effective adaptation strategies to maintain the sustainability of traditional agriculture in an era influenced by climate change.

Climate change has posed serious challenges to traditional agricultural practices worldwide. Increasing global temperatures, changes in rainfall patterns, and the frequency of extreme weather events affect the

productivity and stability of agriculture [23]. In this context, local knowledge acquired through generations of experience in managing land, water, and other natural resources becomes critical in developing adaptation strategies suitable for local conditions [24].

The vulnerability of traditional agricultural systems to climate change is not only physical but also social and economic. Traditional farming communities often have a high dependence on certain crops or specific agricultural practices that are vulnerable to climate fluctuations [25]. Moreover, the adoption of modern technology in traditional farming practices can also alter the patterns of interaction between humans and the environment, potentially reducing crop genetic diversity and increasing dependence on external inputs.

However, local knowledge also offers significant adaptation potential in the face of climate change [8]. Traditional farming practices often reflect a delicate balance between humans and nature, with knowledge of weather patterns, soil, and crops transmitted through generations. Integration of traditional knowledge and modern science can create innovative adaptation solutions, such as using drought-resistant crop varieties or more efficient water management practices [26].

Nevertheless, there are concerns that cultural shifts and human migration from rural to urban areas may threaten the sustainability of local knowledge and traditional farming practices. The loss of generational knowledge about traditional farming practices can reduce communities' ability to adapt to ongoing climate change [27]. Thus, a deep understanding of the

complexity of the relationship between humans, the environment, and culture in the context of climate change can provide valuable insights into the development of sustainable adaptation strategies. Through an ethnoecological approach, research can provide a solid scientific foundation for maintaining the sustainability of traditional agricultural practices in an era influenced by climate change.

4. CONCLUSION

In this study, we highlighted the complex impacts of climate change on traditional agricultural practices from an ethnoecological perspective. It was found that climate change poses serious challenges to the sustainability of traditional farming systems, yet also offers adaptation potential through the integration of local knowledge with modern science.

RECOMMENDATIONS

As recommendations, we suggest enhancing efforts to promote the integration of traditional knowledge and modern science in the development of agricultural adaptation strategies. Additionally, there is a need for greater support in preserving and documenting local knowledge and traditional farming practices to maintain cultural and ecological sustainability.

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