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What would you like to learn more about?

what threat does climate change pose to coffee production?



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Wprowadzając zapytanie można użyć języka naturalnego i sformułować je w dowolny sposób (w języku angielskim)

what threat does climate change pose to coffee production?

Summary

Climate change poses several threats to coffee production, supported by evidence from multiple academic abstracts:

Direct and Indirect Impacts:

- Climate change adversely affects coffee production, leading to reduced yields, lower quality, and increased intensity and frequency of extreme climate events [1](#) [2](#) [3](#) .
- It also results in a reduction in suitable production areas, increased pest and disease incidence, and changes in rainfall patterns [1](#) [2](#) [4](#) [5](#) .

Vulnerability and Adaptation:

- Smallholder coffee farmers, especially in Latin America, are highly vulnerable to climate change due to rising temperatures, distorted rain patterns, and increased pest and disease problems [2](#) [5](#) [6](#) .
- Sustainable management practices, such as agroforestry, are identified as potential solutions to enhance resilience to climate change [1](#) [2](#) [7](#) .

Economic and Social Impact:


- The economies of coffee-producing countries, such as Kenya, heavily rely on coffee production, and climate change poses a significant threat to the livelihoods of millions of small-scale farmers [4](#) [5](#) [8](#) .


Policy and Market Interventions:


- Urgent action is needed to address financial, environmental, and technical constraints that limit the availability of adaptation strategies to smallholder producers [1](#) [2](#) [5](#) [9](#) .
- Policy interventions should aim to build resilience and undertake sustainable agricultural practices to improve farmers' adaptive capacity to deal with the effects of climate change [5](#) [8](#) .

In conclusion, the evidence from the academic abstracts underscores the urgent need for comprehensive strategies, including sustainable management practices and policy interventions, to mitigate the threats posed by climate change to coffee production.



Expanded summary 

Concept Map 

Topic experts 

 New search

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References

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Agroecology and Sustainable Food Systems ↗ 2023
- 2 Coffee in the crosshairs of climate change: agroforestry as abatis
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Foundational documents

323 citations

A bitter cup: climate change profile of global production of Arabica and Robusta coffee

C., Bunn, Christian, P.R., Läderach, Peter Roman, O., Ovalle-Rivera, Oriana, D., Kirschke, Dieter
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G., Schroth, Gotz, P.R., Läderach, Peter Roman, J., Dempewolf, Jan, (...), J., Ramirez-Villegas, Julián
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Zwięzłe podsumowanie tematu z odniesieniami do literatury



odniesienia do literatury



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Expanded summary

Based on the user's query, I will address the environmental impacts of climate change on coffee production, the effects of climate change on the quality of coffee beans, the economic implications of climate change on coffee production, and the adaptive strategies for mitigating climate change effects on coffee production.

Environmental Impacts of Climate Change on Coffee Production:

- Climate change poses significant threats to coffee production, including changes in aptitude and suitability for production, increased pressure on the production system, and a reduction in suitable production areas [1](#) [2](#) [3](#) [4](#) [5](#) .
- Climate change is predicted to reduce bio-climatic suitable areas, growth, and yield of coffee, as well as induce the occurrence of pests and diseases [2](#) .
- The risk of exceeding critical threshold levels for coffee productivity rises sharply with global warming, indicating a negative impact on global coffee productivity [3](#) .
- Adverse environmental impacts include a reduction in suitable production areas, lower yields, increased intensity and frequency of extreme climate events, and a greater incidence of pests and diseases [4](#) .
- Potential environmental solutions include altitudinal shifts, new resilient cultivars, altering agrochemical inputs, and agroforestry [4](#) .

Effects of Climate Change on Coffee Bean Quality:

- Changes in light exposure, altitude, water stress, temperature, carbon dioxide, and nutrient management have been found to influence coffee quality [6](#) .
- Increased altitude is associated with improved sensory attributes of coffee, while increased light exposure is associated with decreased sensory attributes [6](#) .

Economic Implications of Climate Change on Coffee Production:

- Climate change is adversely affecting coffee production, impacting both yields and quality, which supports the livelihoods of over 25 million people globally, the majority of whom are smallholder farmers [4](#) .
- Smallholder producers, particularly those in the coffee belt spanning the tropics, are already experiencing the impacts of climate change, leading to economic implications for these communities [4](#) .
- Financial, environmental, and technical constraints limit the availability of adaptive approaches to farmers, particularly smallholder producers, highlighting the urgent need to address these barriers through policy and market mechanisms [4](#) .

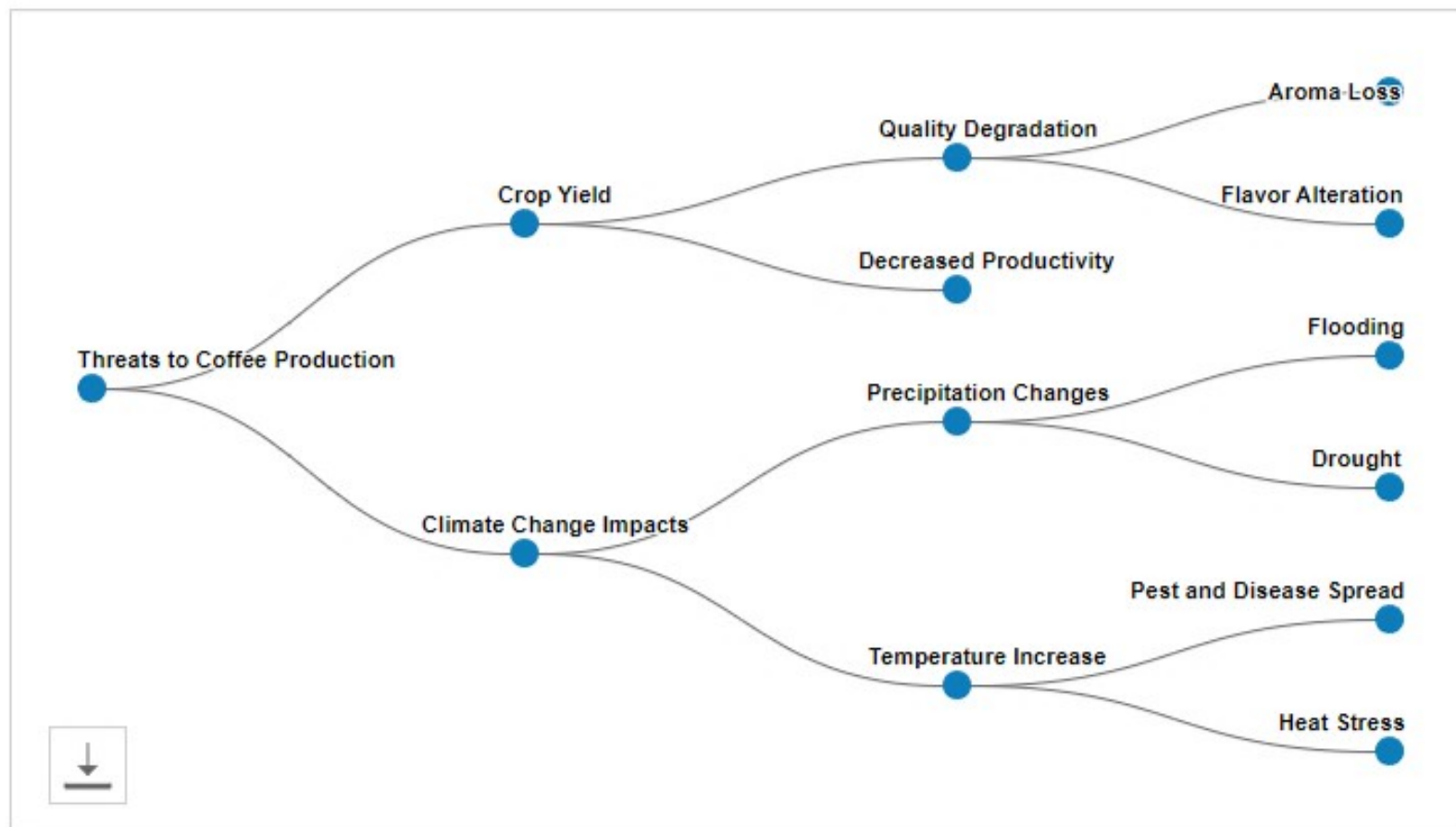
Adaptive Strategies for Mitigating Climate Change Effects on Coffee Production:

- Adaptive strategies pursued by farmers to reduce the impacts of climate change include selecting appropriate shade tree species and their optimal management, farmers training, soil fertility maintenance and protection, and pests and diseases management [2](#) .
- Improving farmers' access to weather, fair market, and technology will enhance their adaptive capacity to

"Podsumowanie rozszerzone" zapewnia bardziej kompleksową i dogłębną odpowiedź na zadane pytanie

Concept Map

"Mapa konceptu" wizualizuje powiązania między tematami i obszarami badawczymi



Is this Concept map helpful?

Yes No

Concept Map

Topic experts

Zobacz, kim są eksperci
w danej dziedzinie

Kath, Jarrod M. J.M.

533 citations 3 matching documents 17 h-index

Jarrod M. Kath is an expert in assessing the impact of climate change on coffee production. Their recent publications focus on using integrated spatial modeling to identify potential coffee growing areas, as well as determining critical thresholds for global coffee production under climate change. Their research provides valuable insights into the specific threats that climate change poses to coffee production.

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Byrareddy, Vivekananda Mittahalli V.M.

251 citations 3 matching documents 8 h-index

Vivekananda Mittahalli Byrareddy has expertise in evaluating the effects of climate change on coffee production. Their recent publications center around assessing the scale-dependency of climate risks in coffee-based agroforestry systems and determining critical thresholds for global coffee production under climate change. Their research offers valuable knowledge on the various threats that climate change presents to coffee production.

[Preview profile](#)

Mushtaq, Shahbaz S.

2,454 citations 2 matching documents 30 h-index

Shahbaz Mushtaq is an expert in understanding the impact of climate change on coffee production. Their recent publications focus on assessing the scale-dependency of climate risks in coffee-based agroforestry systems and determining critical thresholds for global coffee production under climate change. Their research provides valuable insights into the specific threats that climate change poses to coffee production.

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- ↳ [How does rising temperatures affect the growth and quality of coffee beans?](#)
- ↳ What are the potential impacts of changing rainfall patterns on coffee production?
- ↳ How does climate change contribute to the spread of pests and diseases in coffee plantations?

Dodatkowe pytania
rekomendowane przez
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How does rising temperatures affect the growth and quality of coffee beans?

Summary

Based on the provided abstracts, the impact of rising temperatures on the growth and quality of coffee beans can be summarized as follows:

Effect of Temperature and CO₂ on Coffee Bean Quality:

- Elevated temperatures are predicted to have major negative impacts on coffee crop yield and bean quality [1](#).
- Exposure to high temperatures during fruit maturation did not strongly depreciate bean quality, especially under conditions of unrestricted water supply and moderate irradiance [1](#).
- Elevated air CO₂ contributed to preserving bean quality by modifying and mitigating the heat impact on physical and chemical traits of coffee beans, which is relevant in the context of predicted climate change and global warming scenarios [1](#).

Climate Change and Coffee Production:

- Climate change, including rising temperatures, is projected to significantly lower coffee production, affecting yield and quality due to changes in rainfall and temperature [2](#).
- Suitable areas for coffee production are projected to decrease significantly, with average yield projected to decrease between 25% and 75% of the current yield by the 2050s [2](#).

Altitude and Coffee Bean Quality:

- Altitude and light conditions minimally affected most of the studied physical and chemical attributes of green coffee beans, with sporadic changes in chemical compound contents [3](#).
- Altitude extended the fruit maturation period and altered a larger number of bean attributes, contributing to improved sensory cup quality [3](#).

Unfortunately, none of the abstracts directly address the specific combined effects of rising temperatures on the growth and quality of coffee beans. However, based on the available information, it can be inferred that rising temperatures, in combination with other environmental factors, can have complex and multifaceted

References

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394 citations

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