# Article information:

Sustainability | Free Full-Text | Effect of Biochar Application on Soil Fertility, Nitrogen Use Efficiency and Balance in Coastal Salt-Affected Soil under Barley&ndash;Maize Rotation
<https://www.mdpi.com/2071-1050/15/4/2893>

# Article summary:

1. Biochar application can improve soil fertility, increase crop yield, and promote nitrogen use efficiency in coastal salt-affected soil.

2. The effects of biochar on soil properties and crop growth vary with different application rates, with higher rates leading to greater increases in soil water content and macro-aggregates but also increasing soil salinity.

3. Biochar application can reduce apparent nitrogen loss during crop planting, with lower application rates being more effective at reducing such losses. Control of biochar application rates is therefore important for improving coastal salt-affected soil.

# Article rating:

May be slightly imbalanced: The article presents the information in a generally reliable way, but there are minor points of consideration that could be explored further or claims that are not fully backed by appropriate evidence. Some perspectives may also be omitted, and you are encouraged to use the research topics section to explore the topic further.

# Article analysis:

The article "Effect of Biochar Application on Soil Fertility, Nitrogen Use Efficiency and Balance in Coastal Salt-Affected Soil under Barley-Maize Rotation" provides a comprehensive study on the potential benefits of biochar application in coastal salt-affected soil. The authors conducted a field micro-plot experiment to investigate the effects of different biochar rates on soil fertility, nitrogen use efficiency, and balance.

The article presents a clear introduction to the problem of salinization in coastal lands and its impact on soil structure and land productivity. It also highlights the importance of nitrogen as an essential macronutrient for plant growth and yield formation. The authors argue that biochar has great potential to mitigate these issues by improving poor soil properties, promoting crop growth, and increasing nutrient adsorption and utilization.

The study's methodology is well-described, with detailed information provided on the site description, experimental design, data collection methods, and statistical analysis. The results are presented clearly and comprehensively, with tables and figures used to illustrate key findings.

One potential bias in the article is that it focuses solely on the positive effects of biochar application without exploring any potential negative impacts or risks associated with its use. While there is some discussion of ammonia volatilization and N2O emission as environmental concerns related to nitrogen use efficiency, there is no mention of any potential negative impacts associated with biochar production or application.

Another limitation of the study is that it only investigates the effects of biochar application under a barley-maize rotation system. This limits the generalizability of the findings to other crops or agricultural systems.

Overall, while this article provides valuable insights into the potential benefits of biochar application in coastal salt-affected soil, it would benefit from a more balanced discussion of both positive and negative impacts associated with its use. Additionally, future research should explore its effectiveness across different crops and agricultural systems.

# Topics for further research:

* Negative impacts of biochar production and application
* Environmental risks associated with biochar use
* Biochar production methods and their sustainability
* Biochar application in different agricultural systems
* Effects of biochar on soil microbial communities
* Biochar's impact on soil carbon sequestration and greenhouse gas emissions

# Report location:

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