

Enhancing Rice Authenticity and Traceability Through a Digital Field Data Recording App

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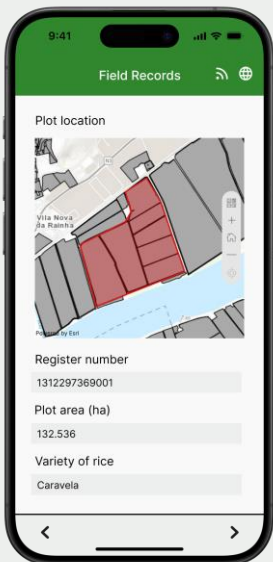


Background

Rice represents one of the most important crops worldwide, being a staple food for more than half of the global population¹. The extensive scale of rice production highlights the need for a robust system to track paddy rice through the supply chain, ensuring safety, security, and promoting sustainable rice-based food production^{2,3}. Integrated Production emphasizes natural resource management and prioritizes regulatory mechanisms, which are crucial for achieving these agricultural goals. This approach requires meticulous documentation of farmer commitments and obligations. Traditional paper-based data collection in rice production poses challenges, compromising accuracy and traceability.

Our aim

Developing and implementing a digital tool (App) for field data recording in integrated rice production.



App development



- **Platform:** The App was developed using Survey123 for ArcGIS, a geographic information system software by ESRI. It is user-friendly and convenient, compatible with both Android and iOS devices.
- **Functionality:** The App streamlines data management, enhances accuracy, and facilitates real-time reporting. It supports farmers in adhering to Integrated Production standards and improving operational efficiency. Entries in the App include information on agricultural practices such as phytosanitary treatments, fertilization (according to the fertilization plan), and other operations, along with justifications and the ability to upload photos. This allows for evaluating the appropriateness of the practices in line with Integrated Production principles, ensuring product traceability tailored to each situation.
- **Reporting:** The App generates reports for audits and rice chain stakeholders, providing a comprehensive overview of the agricultural processes involved.

Digital field data recording

Field data from 13 farmers located in the Tejo (Tagus) river region in Portugal, collected in 2023, has been imported into the App. Additionally, real-time registrations for the 2024 campaign are currently underway for the Mondego and Tejo regions.



Future perspectives

- This initiative represents a notable advancement in agricultural technology, ensuring efficient data management and compliance with stringent food safety standards;
- Future plans include integrating this digital solution into broader traceability frameworks, including blockchain technology, to enhance transparency and sustainability across the rice supply chain.



This study aligns with several Sustainable Development Goals (SDGs) established by the United Nations.

SDG 9: The development and implementation of a digital tool for field data recording represent innovation in agricultural technology. By modernizing data collection and management practices, the App improves efficiency and accuracy within the rice production industry. **SDG 12:** The emphasis on Integrated Production promotes sustainable agricultural methods. By enhancing traceability and transparency through digital solutions, the study supports responsible consumption and production patterns, ensuring that food safety standards are met, and environmental impacts are minimized.

References

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- [3] Yakubu, B. M., Latif, R., Yakubu, A., Khan, M. I., & Magashi, A. I. (2022). RiceChain: secure and traceable rice supply chain framework using blockchain technology. *PeerJ. Computer science*, 8, e801. <https://doi.org/10.7717/peerj.cs.801>.

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