

Review of: "Adoption of Machine Learning Methods for Crop Yield Prediction-based Smart Agriculture and Sustainable Growth of Crop Yield Production – Case Study in Jordan"

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Potential competing interests: No potential competing interests to declare.

The paper offers a valuable and timely contribution to the field of agriculture by exploring the use of machine learning (ML) techniques for crop yield prediction in Jordan. By applying a range of ML algorithms such as XGBoost, Random Forest, and Lasso Regression, the study provides a solid framework for understanding how various weather and agricultural factors influence crop production. The use of 23 years of historical data from reliable sources strengthens the model's predictive power, making it a helpful tool for farmers and policymakers aiming to optimize agricultural practices. The study's focus on enhancing food security through accurate yield predictions is highly relevant, particularly for regions facing environmental challenges.

There are some aspects of the research that could potentially be expanded for even greater impact. For instance, incorporating additional features like soil nutrient content or pest and disease data could further refine the model's predictions. Exploring the application of deep learning techniques, such as Recurrent Neural Networks (RNNs), might capture even more complex relationships within the data. Moreover, considering how this model could be adapted for other geographical regions would offer a broader perspective. A brief discussion on the economic and policy implications of crop yield predictions, including how they might influence agricultural planning, could add further depth to the study's findings.

Overall, the paper presents a robust and well-executed study, with the potential for further exploration. A future consideration might be the integration of real-time data for more dynamic predictions, as well as examining the long-term effects of climate change on crop yields. Additionally, enhancing model interpretability through explainable AI could make the insights more accessible to end-users like farmers and decision-makers. The study has laid a strong foundation for future research, with its findings offering significant value in advancing sustainable agricultural practices.