

Review of: "Artificial Intelligence & Nature-Based Solutions in Agriculture: A BT Cotton Pest Management Case Study in India"

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Potential competing interests: No potential competing interests to declare.

Lack of Quantitative Data: The paper lacks specific quantitative data regarding the reduction in pest attacks, increase in income, and overall impact of the AI-based pest management advisory. Without concrete numbers and statistical analysis, it is challenging to assess the effectiveness and significance of the results.

Limited Generalizability: The paper focuses on a specific case study in Ranebennur, Karnataka, and Wardha, Maharashtra states. The lack of data from a broader range of locations and environmental conditions limits the generalizability of the findings. It's unclear whether the results observed in these areas can be applied to other regions with different agricultural practices, climates, and pest pressures.

Environmental Considerations: While the paper mentions the potential benefits of AI-based pest management in reducing environmental pollution and risks to farmers and consumers, it does not delve into the potential environmental impacts of increased pesticide use resulting from the reliance on AI-driven decision-making. It is essential to consider the broader environmental implications of agricultural interventions, including the long-term effects on soil health, water quality, and biodiversity.

Lack of Comparative Analysis: The paper briefly mentions competing technologies such as mating disruption technology and mechanical growing degree day (GDD)-based IPM advisory but does not provide a detailed comparative analysis of these approaches. Understanding the strengths and weaknesses of alternative pest management strategies is crucial for assessing the relative effectiveness and feasibility of AI-based solutions.

Socioeconomic Factors: The paper touches upon the cost implications of adopting AI-based pest management tools but does not thoroughly explore the socioeconomic factors that may influence farmers' willingness and ability to adopt these technologies. Factors such as access to resources, technological literacy, and institutional support are critical determinants of technology adoption in agricultural settings and warrant further investigation.