

Field Fit App: AI-Driven Decision Support for Agriculture Biotechnology

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Introduction

- Agriculture faces growing challenges due to climate variability and resource limitations, increasing the need for efficient, data-driven solutions. Digital tools have emerged to support farmers by providing insights and recommendations to improve farm management and productivity (Pereira et al., 2018; Sjögren et al., 2020).
- This study adopts an international focus, examining the application and relevance of digital agricultural technologies across diverse global farming contexts. However, adoption of such technologies remains inconsistent, making it important to evaluate their real-world effectiveness and user acceptance among farmers.

This study addresses the following research questions:

- How will our newly developed digital app, FieldFit, be introduced and applied in the field?
- What benefits will farmers experience from using FieldFit?
- How will farmers perceive and respond to the technology?

Methods

Approach : This project uses a mixed qualitative research strategy to evaluate FieldFit’s relevance to agricultural biotechnology. A structured review identifies key trends in crop improvement and explore how biotechnology is applied in modern farming practices (Figure 1). Qualitative thematic analysis compares patterns across academic studies to assess alignment and gaps (Mulugeta et al.2024).

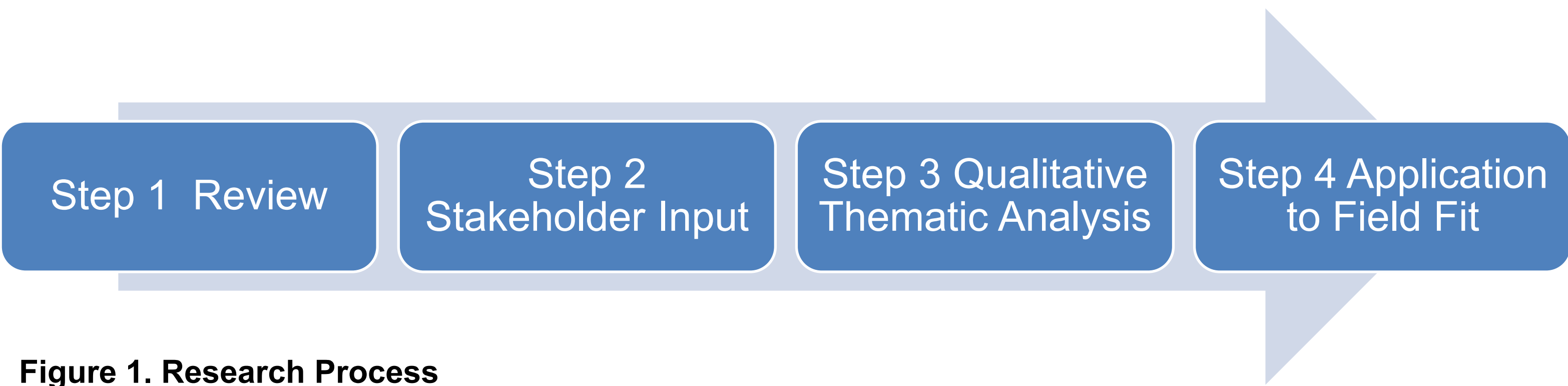


Figure 1. Research Process

By incorporating stakeholder input from ag-tech mentors and insights from an organized review, the project improves the Fieldfit concept .The involvement of stakeholders provides valuable perspectives on usability and practical challenges, as this project focuses on important challenges in agricultural biotechnology.

Qualitative thematic analysis is used to examine data research prototypes (Figures 2, 3 & 4). This process helps identify significant developments and user requirements, guiding Fieldfit development to ensure it is relevant, practical, beneficial and in alignment with Agricultural biotechnology.

Findings

Results show that farmers face variable field conditions, limited technology access, tight margins, and major AI adoption barriers, highlighting the need for an affordable, intuitive, and context-aware tool like FieldFit (Satpati, 2024; Brugler et al., 2023).

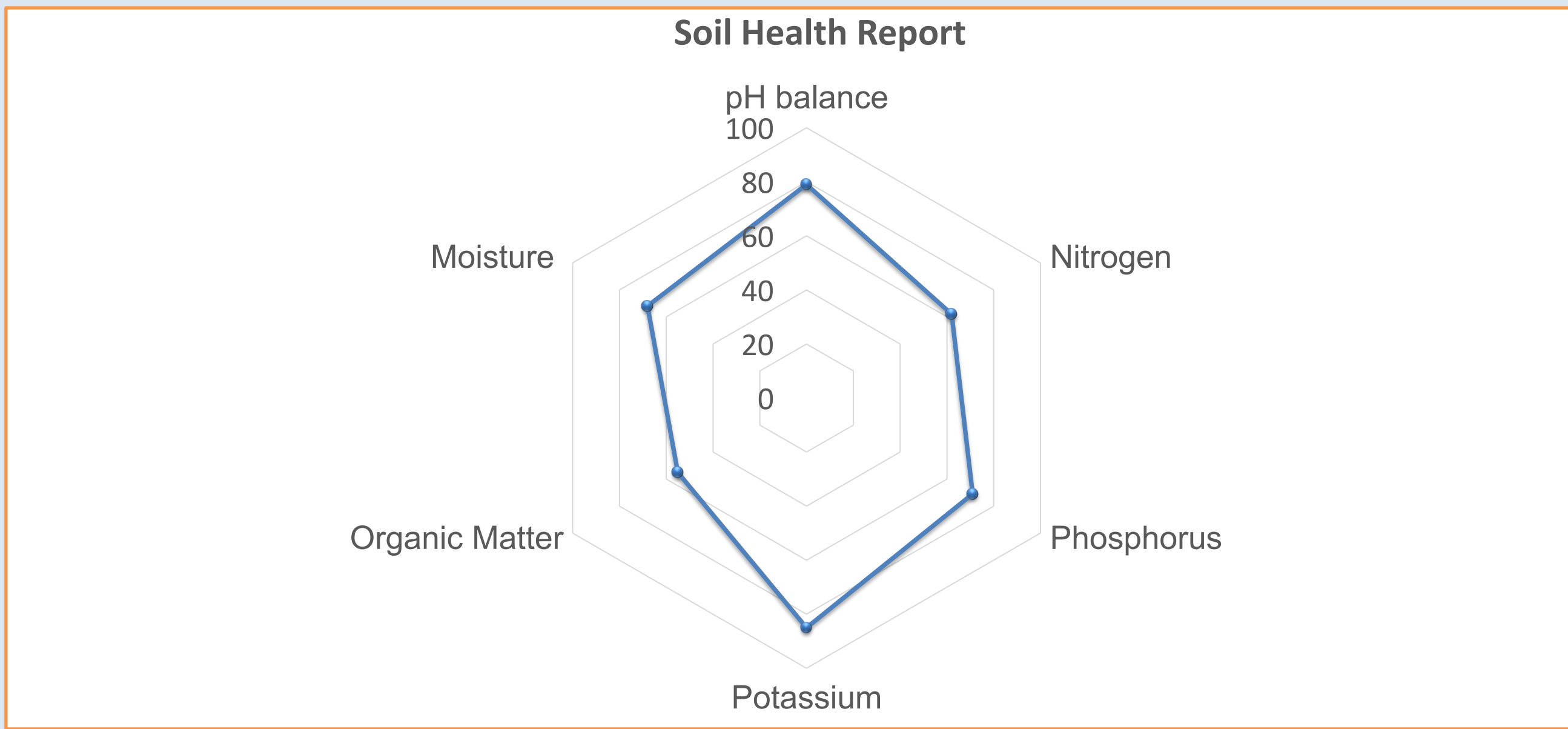


Figure 2. Prototype App 1

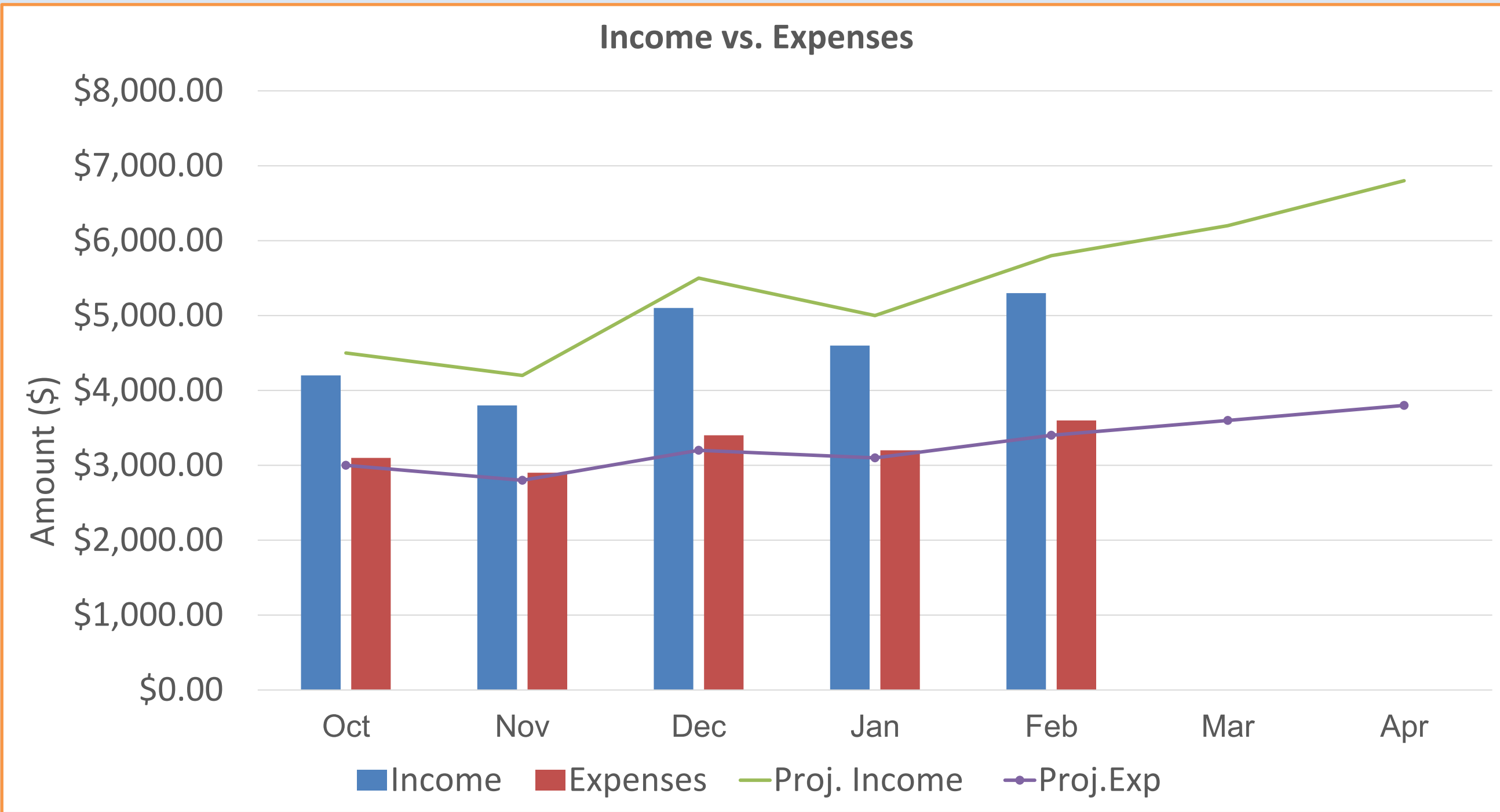


Figure 3. Prototype App 2

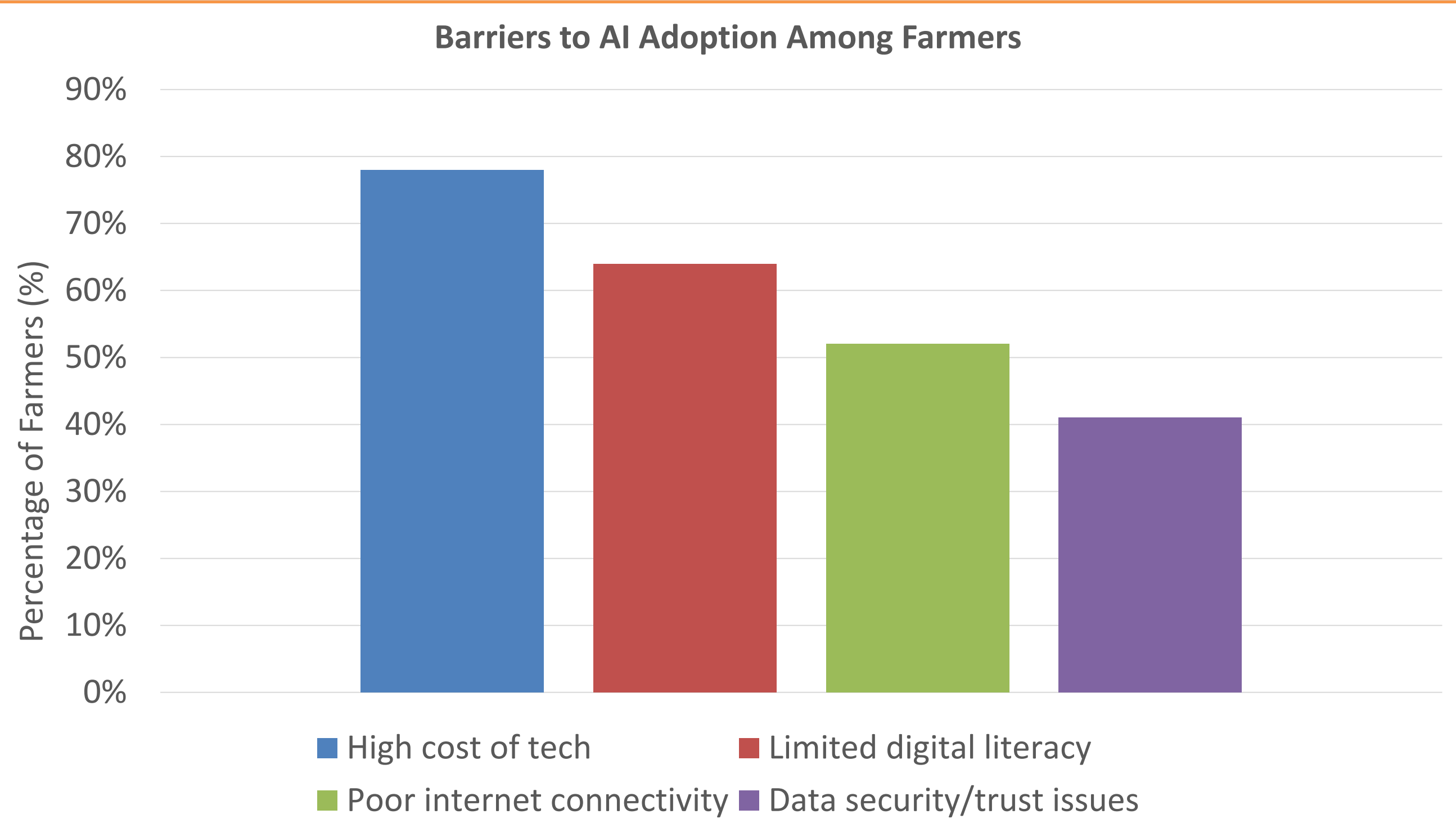


Figure 4. Cumulative Research Percentage (Brugler et al., 2023)

Conclusion

By integrating artificial intelligence with localized, beneficial support customized to farmers' actual circumstances, FieldFit is designed to bridge the gap between modern agricultural knowledge and needy farming communities.

Particularly in rural locations, many farmers lack access to timely guidance from experts, current best practices, and resources for making decisions. FieldFit potentially provides growers with direct assistance on crop management, pest control, irrigation, and safe input use as needed.

The app may help farmers in making well-informed decisions that increase productivity while reducing risks and unnecessary expenses by turning complicated data into simple and practical advice. FieldFit aims to support better farming methods and enhanced resource management to achieve long-term sustainability.

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References

