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# IBM HACKATHON PROJECT

## AI AGENT FOR SMART FARMING ADVICE

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# OUTLINE

- Problem Statement
- Technology used
- Wow factor
- End users
- Result
- Conclusion
- Git-hub Link
- Future scope
- IBM Certifications

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# PROBLEM STATEMENT

Small-scale farmers struggle to access timely and localized agricultural information due to fragmented data sources, language barriers, and limited digital literacy. Critical farming decisions regarding crop selection, weather updates, pest control, and market prices often rely on outdated or generic advice, leading to reduced yields and financial losses. Traditional extension services have limited reach and cannot provide real-time, location-specific guidance needed for optimal decision-making.

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# TECHNOLOGY USED

IBM cloud lite services

Natural Language Processing (NLP)

Retrieval Augmented Generation (RAG)

IBM Granite model

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## IBM CLOUD SERVICES USED

- IBM Cloud Watsonx AI Studio
- IBM Cloud Watsonx AI runtime
- IBM Cloud Agent Lab
- IBM Granite foundation model

# WOW FACTORS

- This agent will significantly reduce research time, improve the quality of literature reviews, help early-stage researchers find direction, and foster interdisciplinary collaboration by making knowledge more accessible and actionable.
- Unique features:
  - Semantic search across research papers, journals, and datasets
  - Auto-summarization of selected papers
  - Citation and reference analysis to trace influence
  - Recommendation of research papers based on a user's current topic
  - Trend analysis over time for specific keywords or domains
  - Collaboration mapping: suggests potential co-authors or institutions based on similar research interests

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## END USERS

- Academic Researchers
- farmers or agricultural stakeholders
- Research Institutions and Universities
- Educators

# RESULTS

IBM watsonx

Upgrade ⓘ 🔔 IMRAN MANYAR's Account ▾ Dallas ▾ IM ⋮

Projects / Farming\_agent / AgriSan

Share feedback ⓘ Autosaved 7:03 PM ▾ New agent + Deploy ⓘ ⓘ

Build

AI Model: granite-3-3-8b-instruct ▾ ⚙️ <

Setup ▾

Configuration ▾

Framework Architecture

LangGraph ▾ ReAct ▾

Instructions [Advanced configuration](#)

You are AgriSan, a helpful AI assistant for farmers. You provide data-driven advice on crop selection, weather forecasts, soil health, pest and disease treatment, and market prices.

When greeted, say: "Hi, I am AgriSan, your smart farming advisor. How can I help you today?"

Knowledge ▾

Tools ▾

Add a tool Create custom tool

Added tools (5)

Google search ⚙️ 🗑️

Retrieve information from the internet with the Google search engine.


Wikipedia search ⚙️ 🗑️

Agent preview

AgriSan 07:03 PM

Welcome to AgriSan

A smart farming AI agent that helps small-scale farmers with personalized crop advice, weather insig



Sample questions

"What crop is best to grow now in my region?" →

"What's the mandi price for tomatoes today?" →

"How do I treat leaf blight in rice?" →

"Is there rain expected this week?" →

Type something... ⏪ ⏩

edunet  
foundation



# RESULTS

## Agent preview

of fruits and vegetables. The choice of crop depends on your region's climate, soil type, and market demand. For a more specific recommendation, I would need to know your location and soil conditions.

► How did I get this answer?



You: 07:04 PM

what are the soil types and fertilizers



AgriSan 07:04 PM

India has a variety of soil types, including alluvial, black soil, red soil, laterite, and mountain soil.


1. Alluvial soils are fertile and found in the Ganges, Indus, and Brahmaputra river basins. They are suitable for growing rice, wheat, sugarcane, and cotton.
2. Black soil, or regur soil, is high in iron and magnesium but low in humus. It's good for millets, pulses, and oilseeds, especially in drier regions.
3. Red soil is suitable for a variety of crops, including millets, pulses, cotton, and sugarcane. It's rich in iron oxide, giving it a reddish color.
4. Laterite soil is typically found in the Western Ghats and is rich in iron and aluminum compounds. It's suitable for growing tea, coffee, and spices.
5. Mountain soil varies greatly but often supports tea, coffee, and fruits.




As for fertilizers, the type and amount needed depend on the soil test results. Generally, a balanced use of nitrogen, phosphorus, and potassium (NPK) fertilizers is recommended. Organic manures like compost and vermicompost can also significantly improve soil health and crop yield.







Type something...




# RESULTS

 IBM watsonx


Upgrade ?  IMRAN MANIYAR's Account Dallas  

[Deployment spaces](#) / [Farmer\\_agent](#) / [AgriSan](#) /      


AgriSan  Deployed Online

API reference Test **Preview**

New chat +


 You 07:48 PM

Hi

 AgriSan 07:48 PM

Hi, I am AgriSan, your smart farming advisor. How can I help you today?

► How did I get this answer?



## RESULTS

## Deployed AI Agent

IBM watsonx

Upgrade

THIRIAN MANDYAR's Account

Details

99

Deployment spaces / Farmer\_agent / AgriSan /

AgriSan

Deployed

Online

API reference

Test

Preview

New chat

You 08:04 PM

"How do I treat leaf blight in rice?"

AgriSan 08:04 PM

Hi, I am AgriSan, your smart farming advisor. How can I help you today?

To treat leaf blight in rice, you can follow these steps:

- 1. Identify the Problem:** Confirm that the symptoms on your rice plants match those of leaf blight. Look for brown spots or lesions on the leaves, which may later turn yellow and fall off.
- 2. Remove Infected Plants:** To prevent the spread, remove and dispose of the most severely affected plants. Avoid composting them as this might spread the disease.
- 3. Use Fungicides:** Apply appropriate fungicides. Consult with a local agricultural extension service or supplier for the most effective products in your area. Common fungicides used include copper-based products, mancozeb, and propiconazole.
- 4. Practice Crop Rotation:** Rotating rice with non-host crops can help reduce the disease pressure in the soil.
- 5. Maintain Proper Field Drainage:** Ensure your fields have good drainage to avoid waterlogging, which can worsen leaf blight.
- 6. Provide Adequate Spacing:** Proper spacing between rice plants can improve air circulation, which helps leaves dry quickly and reduces the risk of fungal infections.
- 7. Use Resistant Varieties:** If available, plant rice varieties that are resistant to leaf blight.

Remember, prevention is key. Regularly monitor your rice fields for early signs of disease and maintain good agricultural practices.

For more specific advice tailored to your location and current conditions, I would need additional information. Would you like to provide details about your region's climate, soil type, or any other relevant factors?

How did I get this answer?

Type something...

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## CONCLUSION

- Summarize the findings and discuss the effectiveness of the proposed solution. Highlight any challenges encountered during the implementation and potential improvements. Emphasize the importance of accurate bike count predictions for ensuring a stable supply of rental bikes in urban areas.

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## GITHUB LINK

- <https://github.com/Imranmaniyar007/AgriSan-AI-Agent.git>

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# FUTURE SCOPE

- Integration with IoT sensors for real-time soil and moisture data
- Voice-based interaction for illiterate users
- Expansion to other regions and languages
- Use of edge computing for offline access
- Collaboration with agritech startups and government schemes

# IBM CERTIFICATIONS

In recognition of the commitment to achieve  
professional excellence



## IMRAN MANIYAR

Has successfully satisfied the requirements for:

### Getting Started with Artificial Intelligence



Issued on: Jul 16, 2025

Issued by: IBM SkillsBuild

Verify: <https://www.credly.com/badges/12d3e495-a9cf-4a90-a265-6c4f9d3343db>





This certificate is presented to

IMRAN MANIYAR

for the completion of

**Lab: Retrieval Augmented Generation with  
LangChain**

(ALM-COURSE\_3824998)

According to the Adobe Learning Manager system of record

**Completion date:** 26 Jul 2025 (GMT)

**Learning hours:** 20 mins





**THANK YOU**