

Introducing AgriLLM

An AI powered agricultural
advisory service for the global
south



CGIAR

DIGITAL
TRANSFORMATION



Generative AI in Agriculture (GAIA)

Scalable access to advisory services

GenAI can provide 24/7 support to farmers who are underserved by human extension systems.

Localized, language-sensitive responses

GenAI can be fine-tuned to local languages and agronomic practices.

Improved knowledge access and continuity

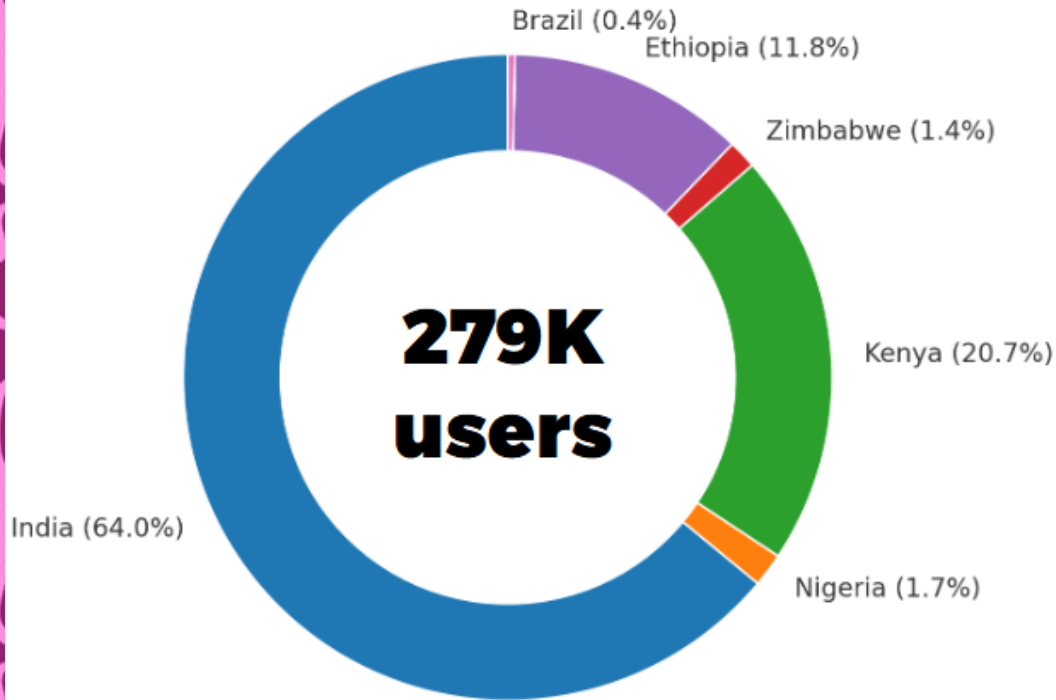
GenAI can recall previous interactions and personalize recommendations over time.

Cost-effective and rapid deployment

Once trained, GenAI can be deployed widely with minimal additional infrastructure.



Farmer.Chat Highlights



*Data as of June 20, 2025

~3 Million

Queries asked on
Farmer.Chat

18.5 Queries

Per user/ in month
of June

27% women

(currently 21%
unknown)

~89% farmers

11% Extension
Agent & others

28% MAU

Monthly active use
Across key
geographies

36% WAU/MAU

monthly active
users returning
weekly

14X growth

In 9 months
[Oct-Jun]

7000 queries

New in Farmer.Chat
every day (June)

What We're Learning from the Ground

Voice matters

- Women and marginalized farmers ask questions they wouldn't ask a person

Built on WhatsApp

- Familiar platform improves accessibility and trust, gateway to other services

Trust is earned

- Farmers validate advice on small plots, then share it

Continuous learning

- Feedback loops from call logs and ratings shape ongoing updates





Why Scale Alone Isn't Enough

Limited contextual data

- Many local agronomic practices and indigenous knowledge systems remain unrecorded or not machine-readable.

Risk of harm

- Without local validation, models may amplify misinformation or deliver unsafe recommendations.

Decision-making gap

- Current models optimize for accuracy, not for how farmers actually make decisions under constraints.

AI in the loop

- Trust depends on embedding AI within existing knowledge networks and community structures

Designing the Next Generation of AI-Enabled Extension

Strategic Partnerships

- Leverage domain expertise, technical capacity, and local networks to co-develop contextually grounded solutions.

Filling Data Gaps

- Without local validation, models may amplify misinformation or deliver unsafe recommendations.

Evaluation and Validation

- Work with partners to test models through red-teaming, field checks, and expert review

Participation and Collaboration

- Involve farmers, extension agents, and community groups throughout development



Oni

The AgriLLM project aims to bridge the agricultural information gap by empowering the members of the agriculture community with a set of solutions



GOAL OF AGRILLM

Help bridge the agriculture information gap by developing a set of **open-source AI models and tools** specifically designed for agriculture

1. DEVELOP AND OPEN-SOURCE THE FIRST GENERAL-PURPOSE “AGRI-LLM”

Empower the **agriculture community** with an Agri-specific LLM serving as a **foundation to build downstream use cases**

2. PRODUCE AN AGRICULTURE-SPECIFIC EVALUATION BENCHMARK

Establish a **common reference point** for agriculture AI innovators to **benchmark their models**

3. DEVELOP AN AI ASSISTANT FOR AGRICULTURE

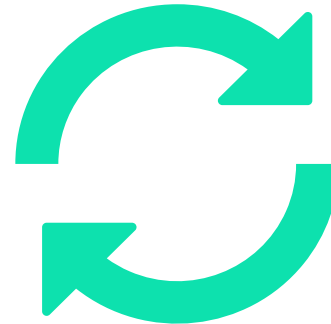
Make agricultural knowledge **accessible, reliable and contextualized** for **farmers and other personas**

Why

The AgriLLM project: A global collaboration of 15+ leading organizations advancing agricultural innovation through shared expertise and data

Growing network of 15+ partners worldwide (world organization, universities, ...)

- Responsible for providing data, agriculture expertise, testing environments, and for distribution



Collaborative development of the AgriLLM (models & tools)

AI71 - Technological Partner

- Responsible for developing the AI models and products leveraging its technical expertise on AI and LLMs



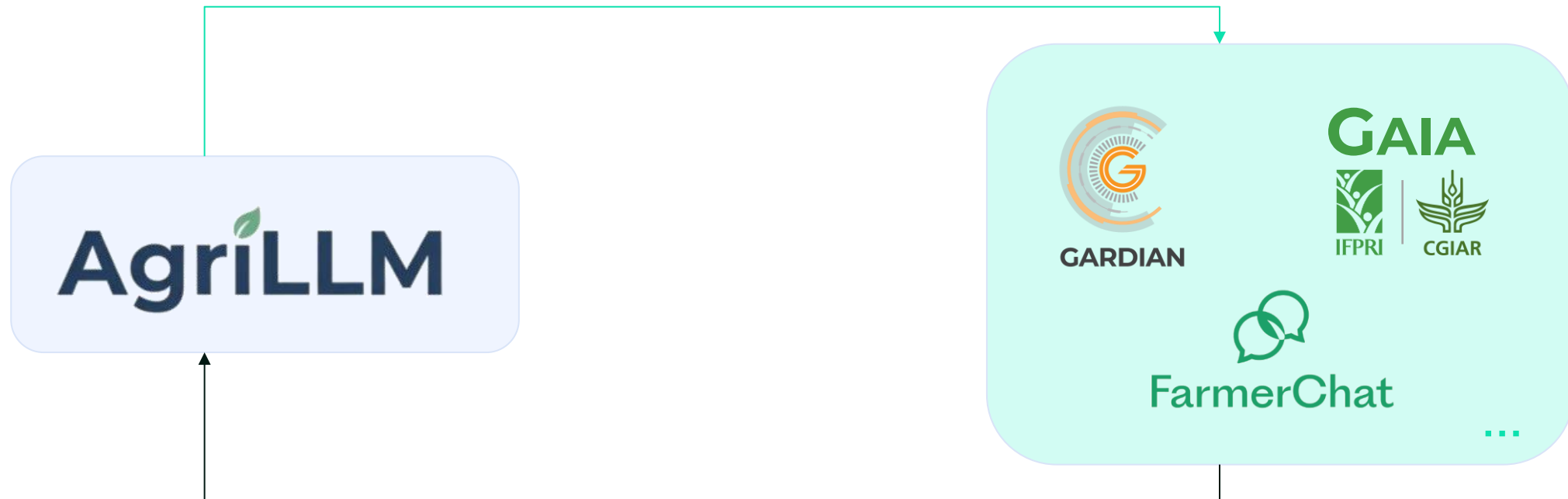
Presidential Court of the UAE - Key project sponsor

- Project sponsor & coordinator / facilitator



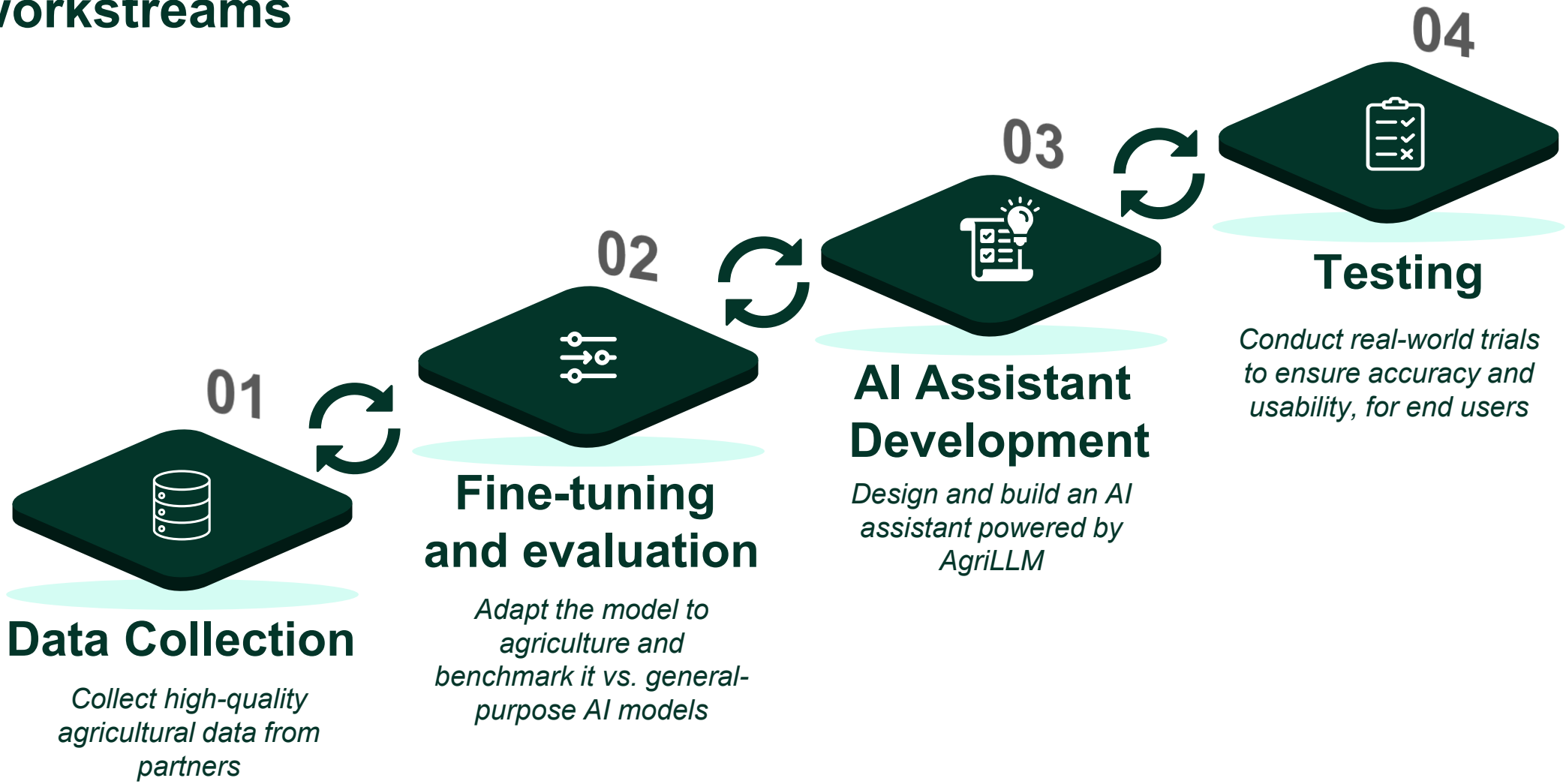
AgriLLM builds on an ecosystem of projects supported by CGIAR and the Gates Foundation, creating multiple opportunities for synergy

- *Provision of an agriculture-specific foundation LLM (“AgriLLM”)*
- *R&D and technical collaboration*

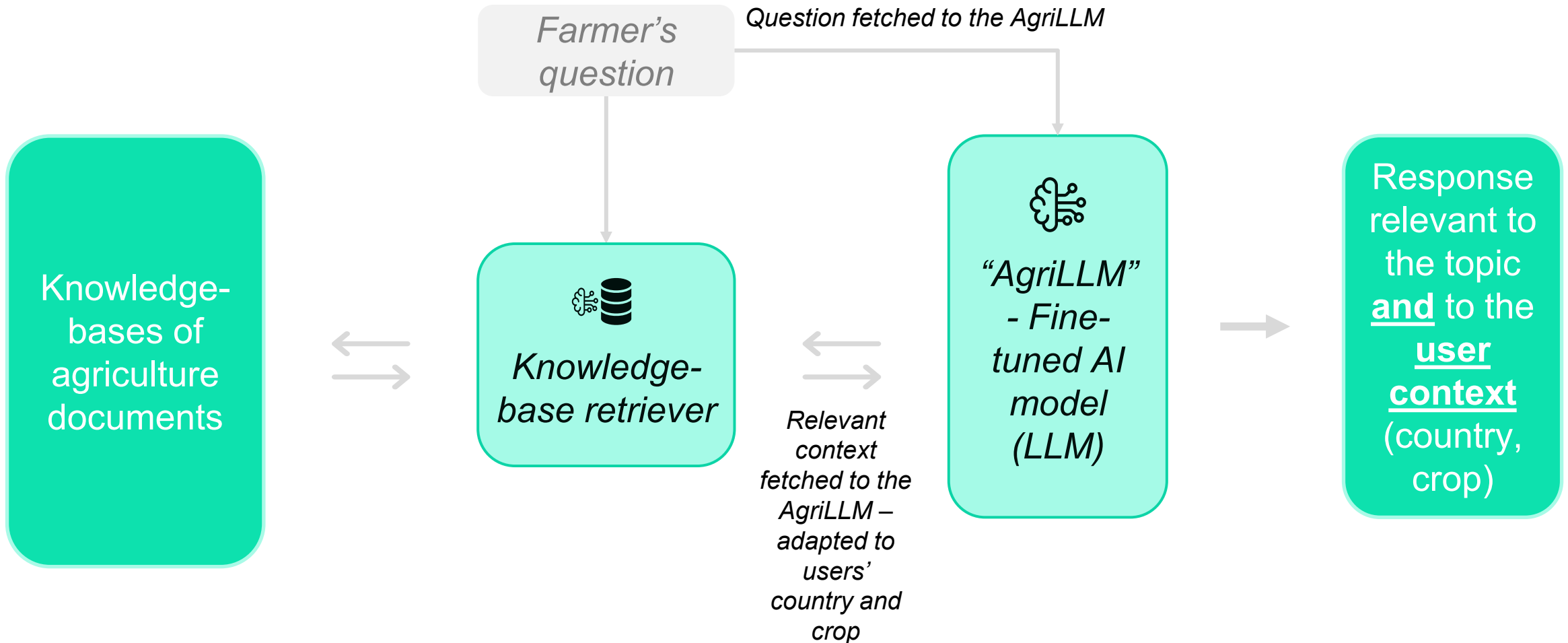


- *Data (documents, golden pairs of Q&As)*
- *Domain-expertise to support the development of LLMs and tools*
- *Connection to local networks of extension networks for scaling and ground-testing*

The development of the AgriLLM is structured around four key workstreams



AI Assistant– One of the key features of the AI Assistant is its knowledge-base retriever (RAG), enabling it to access up-to-date, granular agricultural information



Key Achievements of the AgriLLM Project so far



Data Collection & Processing

200,000+
agriculture-specific Q&A pairs collected -
open-sourced in
December



LLM Fine-tuning & Evaluations

The fine-tuned
“AgriLLM” is **~20%**
more accurate than
general-purpose models



Development of the AI Assistant

Our AI Assistant combines the **fine-tuned LLM** with a **knowledge-base retriever** to generate **crop- and region-specific** responses

Fine-tuning - The “AgriLLM” is safer and more reliable than general-purpose LLMs as it is significantly less likely to make up facts

Preliminary results so far

- The “AgriLLM” is:
 1. **Safer** to use as it reduces hallucinations
 2. **Better suited for reuse** to build downstream use cases
 3. **Producing domain-appropriate language**
- **Final results will be shared in December, when the model is open-sourced and released to the community as a public good**

AI Assistant – The AgriLLM AI Assistant provides crop- and region-specific responses in different languages

Agri AI Assistant

Crop- and region-aware

- Knowledge-base retrieval pipeline with mechanisms to **adapt to the geography and crop**

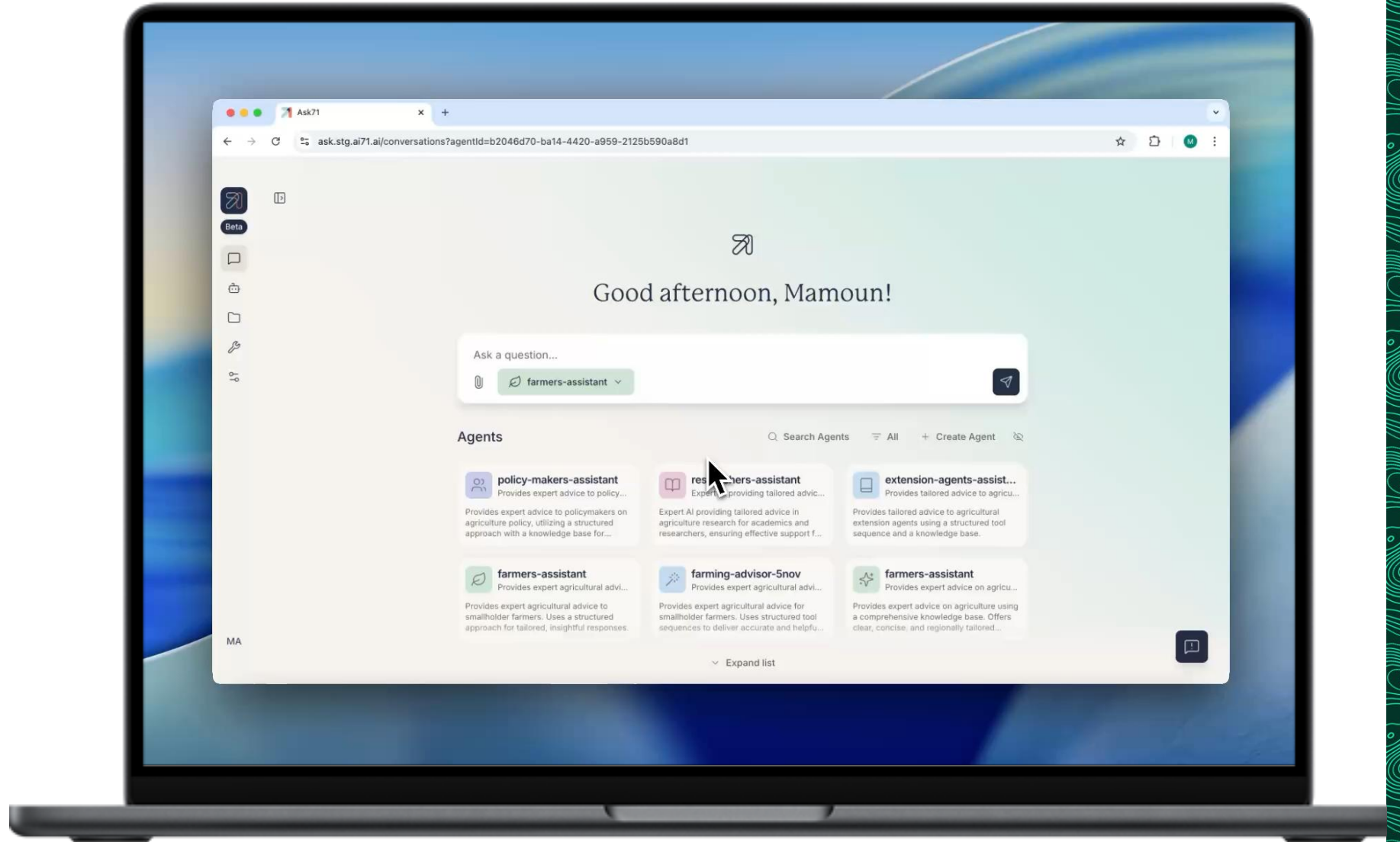
Grounded in verified agriculture knowledge

- Pre-built knowledge bases with **documents from our 15+ partners**

Multilingual

- Target of **100+ languages and dialects** covered

AI Assistant



AI Assistant – The AgriLLM AI Assistant provides responses that are more precise and concise

Answer from ChatGPT - *Factually wrong / hallucinations*

I have both PKM1 and PKM2 moringa seeds and want to plant them without cross-pollination. How far apart should I plant them to maintain seed purity?

Ah, you're thinking carefully about **maintaining genetic purity**—great! Moringa (*Moringa oleifera*) is primarily **cross-pollinated by insects**, especially bees and other pollinators. That means pollen from one tree can easily fertilize flowers of another nearby tree. Since you want to prevent **PKM1 and PKM2 from cross-pollinating**, isolation is key.

Here's a detailed breakdown:

1. Isolation Distance

- Studies and practical experience suggest that **moringa trees should be at least 100–200 meters apart** to reduce cross-pollination risk.
- Some sources recommend **300 meters or more** if you want high confidence in seed purity.
- The exact distance can vary depending on:
 - **Density of pollinators** (bees can travel several hundred meters)
 - **Wind patterns** (though wind plays a minor role)
 - **Surrounding moringa trees** (any nearby trees could be a source of pollen)

2. Additional Strategies

- **Flower bagging:** Covering flowers with a fine mesh bag before they open ensures they are pollinated only by hand or by no external pollen.

+ Ask anything

ChatGPT can make mistakes. Check important info.

Answer from the AgriLLM assistant - *Correct & concise*

I have both PKM1 and PKM2 moringa seeds and want to plant them without cross-pollination. How far apart should I plant them to maintain seed purity?

farmers-assistant

Inspect agent thoughts

For Moringa seed production, trees should be spaced between 2.5 × 2.5 meters (minimum) to 5 × 5 meters (maximum). A spacing of 4 × 4 meters has been shown to work well in practice. It's important to note that trees grown for seed production should be kept separate from those grown for leaf production, as unpruned trees (for seeds) develop larger canopies and stronger root systems that can outcompete pruned trees (for leaves).



Call to Action

AgriLLM: Launching December 2025 in the UAE

- **Collaborate** – Partner with us to advance data collection, evaluation, and local adaptation.
- **Attend the Launch Event** – Be part of the unveiling of AgriLLM in the UAE this December.
- **Get in Touch** – For collaboration or launch invitations, contact contact@ai71.ai

AgriLLM represents more than technology - it's the **collective effort** to make agricultural intelligence a **common resource for the agriculture world**

Innovation Showcase

Introducing AgriLLM: An AI-Powered Agricultural Advisory Service for the Global South

Speakers include:



DATE

Fri, 14-Nov-2025



TIME

09:00 am - 10:00 am BRT



LOCATION

Pavilion PV-E170,
Blue Zone



**Silvia
Massruhá**
President / Head
of Digital
Agriculture
EMBRAPA



**Kate
Kamarchuk**
Client Solutions
Director
ai71



**Marcelo
Behar**
Special Envoy for
Bioeconomy and
Senior Advisor
Ambition Loop



**Mamoun
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**Eliot Jones-
Garcia**
Senior Research
Analyst
CGIAR/IFPRI



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