



AI in Every Farmer's Pocket

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Artificial intelligence is transforming agricultural weather advisory services by delivering timely, personalized and actionable information directly to farmers through widely used communication platforms. This article highlights the AI-powered context-specific agrometeorological advisory initiative jointly launched by ICRISAT and ICAR in Maharashtra, where the iSAT platform integrates real-time weather data, crop models, soil information and GPS-based farm location to generate hyper-local recommendations. Delivered through WhatsApp in regional languages, the system enables farmers to make informed decisions on sowing, irrigation, fertilizer application and crop protection without requiring additional applications or technical expertise. By converting complex meteorological information into simple, practical advisories, the initiative enhances climate resilience among smallholder farmers while reducing weather-related production risks. The project also serves as a foundation for the upcoming MausamGPT platform and demonstrates how artificial intelligence can bridge the gap between advanced climate science and last-mile agricultural extension, offering a scalable model for climate-smart farming across India and beyond.

Introduction

Picture a cotton farmer in Vidarbha, Maharashtra. It is early June and the sky is uncertain. Sowing time has arrived—but is the monsoon ready? A decade ago, the farmer would have scanned the horizon and relied on experience to make a difficult decision. Today, a WhatsApp message appears on the phone: "Delay sowing by 8 days. Switch to a drought-resistant seed variety. IMD data indicates a delayed monsoon onset in your district." There is no app to download, no website to navigate and no complicated weather charts to interpret, just a clear, practical recommendation delivered in Marathi. This is not science fiction; it is already becoming a reality. The International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), in collaboration with the Indian Council of Agricultural Research (ICAR), has launched an AI-powered, context-specific agrometeorological advisory project in Maharashtra (ICRISAT, 2025). By translating complex weather information into simple, location-specific farm advisories, this initiative has the potential to transform climate-risk management and strengthen the resilience of millions of Indian farmers.

What Exactly Is This Project?

The full name is a mouthful: *AI-powered Context-Specific Agromet Advisory Services for Climate-Resilient Agriculture at Scale*. But the idea is simple. It is an AI chatbot running on WhatsApp that delivers hyper-local weather-based farming advice. The Government of India's Monsoon Mission III funds it (Newsonair, 2025). Rollout has begun through ICAR's Agro-Meteorological Field Units (AMFUs) across Maharashtra.

The pilot targets smallholder farmers first, the ones with the least buffer against crop loss and the least access to expert advice. They are the most vulnerable. They are also the most numerous.

The Brain Behind the Bot: What is iSAT?

At the technical heart of this system sits iSAT, the Intelligent Systems Advisory Tool. ICRISAT originally built and tested iSAT during Monsoon Mission II (ICRISAT, 2025). The new version is smarter. It now blends real-time data from the India Meteorological Department (IMD) with automated crop models (GKToday, 2025). What makes iSAT different from a regular weather app? It does not give generic regional forecasts. Instead, it reads three things together: the specific crop variety in that field, the local soil type and the precise GPS location of the farm. Then it calculates risk. Then it writes advice. Then it translates that advice into Marathi. Then it sends it on WhatsApp.

The data pipeline looks like this:

Raw Meteorological Feeds + Satellite Observations



iSAT Engine / Machine Learning Processing



Hyper-Local Crop & Soil Algorithms



AI Translation into Marathi / Regional Language



Actionable Advice Delivered via WhatsApp

Source: ICRISAT (2025) and GKToday (2025).

From Weather Data to WhatsApp: Real Examples

The real power is in the translation not from one language to another, but from raw climate mathematics into words a farmer can act on. Early pilot data from the iSAT framework showed that up to 80% of participating farmers found the advisories genuinely useful, especially for timing their sowing and protecting harvests before sudden rains (Kumar *et al.*, 2020). The table below shows exactly how the AI converts incoming climate signals into specific farm instructions.

Table 1: AI-Driven Climate Signals and Corresponding WhatsApp Advisories.

Climate Signal Received by AI	WhatsApp Advisory Sent to Farmer
High humidity + rising temperature trend over 5 days	Proactively spray fungicide before fungal outbreak becomes visible
Delayed monsoon onset + low baseline soil moisture	Delay cotton sowing by 8 days; switch to drought-resistant seed variety
Heavy isolated rainfall alert within 48 hours	Postpone scheduled fertilizer application to prevent chemical runoff
Dry spell forecast during critical crop reproductive stage	Activate micro-irrigation immediately to protect yield

Source: ICRISAT (2025).

Why WhatsApp? The Logic Is Simple

This is perhaps the smartest design decision of the whole project. Farmers in rural Maharashtra do not always have smartphones with large storage. Many are uncomfortable navigating new apps. But almost all of them already use WhatsApp every single day to talk to family, share videos, arrange purchases.

The bot slots directly into that familiarity. There is nothing new to learn. There is no registration form. The advisory just arrives, like a message from a trusted contact. The language barrier is also addressed: messages come in Marathi, not English. Compare this to standard weather portals that display a "40% chance of rain" with no indication of what that means for sorghum at the flowering stage on black cotton soil. The AI removes that uncertainty entirely.

What Comes Next: MausamGPT and Global Expansion

Maharashtra is only the beginning. The larger vision is to scale this initiative across India. Insights gained from the pilot are already helping shape MausamGPT, a dedicated large language model designed exclusively to provide agricultural climate advisory services across India's diverse agro-ecological zones (ICRISAT, 2025). Once validated in India, the framework is intended for South–South expansion. Because the software architecture is modular, the same WhatsApp-based advisory system can be adapted for dryland farming communities across Sub-Saharan Africa, where climate variability causes similar and often even greater crop losses among smallholder farmers. Once the platform is established, the cost of delivering personalised advisories to each additional farmer becomes minimal, making the system highly scalable.

Conclusion

For generations, farming decisions in India depended on reading the clouds and seeking advice from experienced elders. Today, an AI engine analyses satellite observations, weather forecasts, soil information and crop conditions before sending a clear recommendation to a farmer's WhatsApp account, all before the morning's work has begun. The ICRISAT–ICAR initiative represents far more than a technological innovation. It marks a new way of delivering climate intelligence directly to farmers by removing technical jargon, eliminating the need for specialised mobile applications and overcoming language barriers. What reaches the farmer is a simple, practical recommendation in the local language through a platform they already use every day. If MausamGPT fulfils its promise and nationwide implementation progresses as planned, millions of Indian smallholders and eventually farming communities across the Global South could gain access to personalised, real-time, expert-level weather intelligence that was once available only to large commercial farms. That would represent a significant step towards climate-resilient agriculture, delivered through one of the world's most familiar messaging platforms: WhatsApp.

References

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