

ARTIFICIAL INTELLIGENCE TRANSFORMING AGRICULTURE

AI is a powerful tool with the potential to help grow more food sustainably and build more resilient agri-food systems.

Researchers are already applying AI to solve real problems in agriculture—making it possible to farm smarter, adapt to climate change and improve livelihoods.



HOW AI CREATES IMPACT ACROSS AGRICULTURE



PRECISION AGRICULTURE

AI and data help farmers make better decisions—from planting to harvest—using fewer resources and maximizing yields.



DISEASE DIAGNOSIS & MITIGATION

AI tools detect crop diseases and pests early, helping farmers act quickly to protect their crops and reduce losses.



YIELD PREDICTION & CLIMATE ADAPTATION

AI models use weather, soil and crop data to predict yields and climate risks—helping farmers plan ahead and adapt.



KNOWLEDGE ACCESS AT SCALE

Chatbots and digital advisors translate data into local languages and actionable guidance, anytime, anywhere.



INCLUSIVE INNOVATION

AI helps capture farmers' voices and needs, placing their priorities at the center of research and innovation.

AI IN ACTION: EXAMPLES OF REAL-WORLD APPLICATIONS

1. TUMAINI

DISEASE DIAGNOSIS FOR BANANA FARMERS



A smartphone app that helps banana farmers identify diseases and pests from photos and get advice on solutions.

- ✓ Solves 90% of major banana diseases and pests
- ✓ Fast, accurate and easy to use
- ✓ Empowers farmers to protect crops and increase productivity



Hope in the palm of a farmer's hand.

2. MELISA

YIELD FORECASTING WITH AI CHATBOT



A chatbot that estimates maize and wheat yields based on long-term weather forecasts, soil, crop varieties and sowing dates.

- ✓ Helps farmers plan better and manage risks
- ✓ Improves decisions on inputs, sales and storage
- ✓ Supports higher productivity and better livelihoods



Data, forecasts and advice—all in a conversation.

3. ARTEMIS

AI-POWERED CROP BREEDING



Computer vision and AI tools that help breeders evaluate thousands of crop varieties faster and more accurately.

- ✓ Uses drone and smartphone images to collect data
- ✓ Speeds up breeding of climate-resilient, locally adapted varieties
- ✓ Brings new, better seeds to farmers—faster



Accelerating innovation from the lab to the field.

CONSIDERATIONS FOR RESPONSIBLE AND EQUITABLE AI



HUMAN-CENTERED

AI should solve real problems identified with farmers and used by them.



FAIR & INCLUSIVE

Ensure access for all—regardless of gender, age, location or socio-economic status.



DATA PRIVACY

Protect farmers' data and respect their privacy.



DIGITAL ACCESS

Invest in connectivity, devices and digital skills for everyone.



SUSTAINABLE IMPACT

AI must support environmental sustainability and long-term resilience.



ETHICAL & TRANSPARENT

Use AI responsibly, with transparency and accountability at every step.



When designed with and for the people who grow our food, AI can be a force for good—supporting farmers, strengthening food systems and building a more food-secure future for all.

