

Virtual Agronomist: Expert Advice for Every Farmer

iSDA (Innovative Solutions for Decision Agriculture) is a non-profit backed by the Bill and Melinda Gates Foundation. It builds on the legacy of the African Soils Information Service (AfSIS). With a mission to deliver expert advice to every farmer, iSDA combines cutting-edge technologies like generative AI with the best agronomic science to cost-effectively tailor advice at the field level. At the core of this mission is iSDA's digital soil map for Africa—the first open map at 30m resolution—enabling farmers to receive precise soil property estimates without expensive soil tests, helping them make informed decisions about crop management and nutrient needs.

Virtual Agronomist, iSDA's next-generation AI advisor, has rapidly gained adoption across Kenya, Uganda, Tanzania, Malawi, and Zambia, advising farmers on over 250,000 plots since its launch in March 2024. The system currently supports 17 crops including maize, rice, soybean, coffee, and sunflower, and can expand to new crops and geographies quickly. In 2025, Virtual Agronomist will launch in Senegal, Nigeria, and Ghana, with plans to expand further based on demand.

Virtual Agronomist offers effective digital extension to augment and strengthen existing services, at a cost-per-farmer 10x lower than traditional extension programmes.

Features and Capabilities

The features of Virtual Agronomist are designed to support farmers throughout the growing cycle, offering guidance at key seasonal decision points, including:

- **Field Mapping and Sizing**
- **Individual Nutrient Management Plans** based on:
 - Balanced fertilizer optimization
 - Field-specific soil property estimates
 - Realistic plot-specific target yields
 - Current fertilizer prices, organic nutrient inputs, and cropping history
- **Seasonal Prompts** for timely actions
- **Crop Emergence Checks**
- **Weed Scouting**
- **Pest and Disease Diagnosis**
- **Harvest Monitoring**

Proven Impact

Across crops, Virtual Agronomist advice has delivered average yield increases of approximately 50% in the first season compared to traditional practices. The system generates a plot-specific yield target and helps farmers improve yields season-on-season to manage risks and maximize profitability.

Easy Accessibility via WhatsApp

Delivered via WhatsApp, Virtual Agronomist is easy to use, leveraging farmers' existing familiarity with WhatsApp and requiring no separate app or login. Farmers interact with the system in natural language, asking questions, seeking clarifications, or simplifying recommendations as needed. Farmers can use Virtual

Agronomist directly or via lead farmers to bridge connectivity gaps. The system can be spread farmer-to-farmer or by existing extension agents to widen the reach of their services.

Addressing Soil Health Challenges

Poor soil health is a key problem for African farmers leading to multiple challenges: reduced crop yields, increased erosion, higher greenhouse gas emissions, and loss of biodiversity. Together, these factors undermine smallholder profitability. Virtual Agronomist addresses these challenges with targeted nutrient management and agronomic advice that enhances soil fertility, yields, and profitability. Improved crop growth protects soils from erosion, increases organic matter, and strengthens soil resilience, while sustainable intensification helps reduce land clearing, mitigating emissions and biodiversity loss.

The **"Know Your Soil"** tool further supports farmers by identifying field-specific soil constraints and providing practical management strategies, including conservation techniques and soil health assessments. Together, these solutions enable sustainable, climate-resilient, and profitable farming.

Screenshots of Virtual Agronomist in use

