

Digital Agronomist

A phased roadmap from five farmers to a shared agricultural service

Start from what is already working

The WhatsApp advisory service launched in October 2026. Five farmers in Bomet and Mwea are asking about weather and sharing crop photographs, covering maize, beans and rice. Early usage is approximately 20 messages in a week, as reported by the builder. This is a starting point for learning, not proof of improved farm outcomes.

Guiding principle: Keep WhatsApp as the familiar farmer interface. Build records, professional support and monitoring behind it. Buy equipment only when a clear need and the evidence justify it.

Phase	Main objective	Equipment approach
1. Strengthen	Make the live service dependable and farm-specific	Existing laptop and phones
2. Validate	Follow a supported group through a growing season	Manual sampling and a laboratory partner
3. Enrich	Add useful monitoring and management tools	Hired drone visits and selective sensors
4. Expand	Grow with evidence and dependable predictions	Shared field equipment and hosted services
5. Automate selectively	Address proven operational bottlenecks	Specialist trials, not assumed purchases

The next 30 days

- Document what the five farmers ask and what action follows each recommendation.
- Confirm consent and record the minimum farm information needed to give relevant advice.
- Improve reliability and establish a clear escalation route for uncertain cases.
- Identify an agronomist and a suitable soil laboratory for a supported pilot.
- Define how weather information is sourced and checked before introducing proactive notifications.

These phases are decision points, not a compulsory equipment ladder. A laboratory partnership can continue indefinitely. A testing hub or robotic collector is not required to expand the advisory service.

Phase 1: Strengthen the live service

Purpose: Move from answering isolated questions to supporting the correct farm with reliable context.

Maintain crop and farm histories, record advice and follow-up, and ask whether recommendations were understood and acted upon. Introduce proactive requests and weather notices only with consent and reliable information. Consequential or uncertain guidance should be reviewed by a qualified agricultural specialist.

Needed equipment/resources	Use
Existing laptop and smartphones	Manage the service, photographs and farmer communication
Internet, charging and a power bank	Reliable field and administrative access
Hosted records, backups and usage monitoring	Protect continuity and understand operating costs
Agronomist access	Review and escalation; a professional resource, not equipment

Move forward when: Farmers return, understand the advice and can describe actions taken; the system reliably keeps each farm's information separate. Drones, permanent sensors and owned laboratory equipment are unnecessary at this stage.

Phase 2: Validate a supported farm pilot

Purpose: Assess the service across an actual growing season. Expand towards 25-50 farms only as delivery capacity allows.

Choose a manageable crop and local group rather than trying to validate every crop at once. Collect traceable soil samples, obtain laboratory results, schedule follow-up and record inputs and harvests. The crop calendar determines evaluation timing.

Additional equipment/resources	Use
Hand probe or auger, clean bucket and cleaning supplies	Representative manual soil collection
Sample bags, labels, gloves and transport box	Traceable sample handling
Laboratory partnership	Dependable testing without buying a laboratory
Shared weighing scale and grain-moisture measurement	Comparable harvest records where relevant

Value and decision: Establish whether advice changes useful actions, what it costs to support a farm and whether farmers remain engaged. Do not claim that a yield change proves causation without considering weather, management and other differences.

Phase 3: Add useful monitoring and management

Purpose: Improve follow-up and prioritise visits, without creating an equipment-heavy service.

Adapt the existing research portal for staff to manage records, review cases and track progress. Trial hired camera-drone visits for selected plots. Add sensors only when readings can change a decision, such as irrigation timing. Check aerial observations on the ground.

Equipment option	Condition for adding it
Hired camera drone and authorised operator	Aerial photographs answer a useful question beyond phone photographs
Owned camera drone, batteries, charger and accessories	Regular use justifies ownership, approvals and maintenance
Selected moisture sensors or a shared weather station	Reliable readings support a clear farming action
Optional portable soil-testing station	Testing volume, turnaround and quality justify it; retain reference-lab checks

Limits: Ordinary camera drones do not collect soil or measure nutrients and do not provide true multispectral NDVI. Portable testing requires an operator, sample preparation, reagents and quality control; one kit will not automatically supply all model inputs.

Phase 4: Expand with evidence

Purpose: Serve additional farmer groups and develop predictions supported by real local records.

Start with similar farms before adding very different crops and regions. Work through cooperatives and extension partners. Compare prediction models with simple baselines and evaluate them on farms and seasons not used to develop them. Dependable yield prediction may require several growing seasons and much broader data than the initial pilot.

Needed equipment/resources	Approach
Additional phones and sampling kits	Match staff coverage to the support workload
Shared monitoring equipment	Expand only where demonstrated use justifies it
Dependable hosted services and backups	Maintain access, privacy and continuity
Specialist computing when needed	Use temporary capacity; an owned AI server is not an automatic requirement

Move forward when: Service quality, delivery cost and funding are sustainable; prediction uncertainty is understood; professional oversight and privacy safeguards can be maintained as the service grows.

Phase 5: Explore selective automation

Purpose: Address a proven bottleneck, not introduce robotics for its own sake. This is a later, separately assessed development stream, not a promised product release.

Possible development	What it needs
Ground-based soil sampling	A suitable platform, sampler, cleaning and sample-tracking arrangements
Drone-mounted soil collection research	A proven compatible aircraft, engineered collector, controls and supervised field trials
Assisted irrigation	Reliable sensors and controllers, manual override and fail-safe arrangements
Specialist crop monitoring	Appropriate cameras, processing and field validation

Do not buy a heavy-lift aircraft before the collector design, soil interaction, safety and operating requirements are established. Every option requires specialist partners, training, maintenance, applicable approvals and comparison with simpler alternatives.

Impact should be demonstrated at every stage

Intended value	Evidence
Accessible support	Advice understood, repeat use and follow-through
Better use of resources	Input quantities, costs and reasons for changes
Timely intervention	Reporting, review and action times
Farm outcomes	Comparable harvest and income records, with relevant differences considered
Local capacity	Training, effective partnerships and continued farmer participation

Safeguards and current limitations

Collect information with consent, keep farmer identities out of public materials and provide referral when evidence is insufficient. The research model used simulated data and remains experimental. Early pesticide and weather benefits are farmer-reported, not independently verified. No fixed yield or income improvement is promised.

The destination: A trusted, shared agricultural support service. The route is to learn from the first five farmers, demonstrate value, then add people, data and equipment in that order.