SAMPLE TOOL RECORD (AGRICULTURE)

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1) SNAPSHOT

- **Tool name:** Farmer Climate Advisory Assistant (FCAA)
- **Lead organization(s):** GreenHarvest Alliance + Regional Cooperative Union
- **Country / Region:** Western Kenya (Lake Basin smallholder zone)
- **Domain:** ☑ Agriculture
- **Deployment status:** ☑ Active
- **Timeframe of deployment:** Mar 2022 – Nov 2024

One-sentence use case:

"This tool helped smallholder farmers decide when to plant, irrigate, and apply fertilizer under increasingly unpredictable rainfall."

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2) THE REAL-WORLD PROBLEM

Smallholder farmers in Western Kenya rely heavily on seasonal rainfall to grow maize, beans, and sorghum. Over the last decade, rainfall patterns have become more erratic — late starts, sudden dry spells, and intense downpours have caused repeated crop losses.

Before the tool existed, farmers relied primarily on traditional weather signs, radio forecasts, and advice from extension agents who could only visit periodically. Many farmers planted too early, applied fertilizer at the wrong time, or over-irrigated during dry spells, wasting scarce resources.

Women farmers, who make up the majority of small-scale producers in the region, were especially vulnerable because they had less access to extension services and credit.

For local cooperatives, success meant fewer crop failures, better use of inputs, and more predictable harvests — not just higher yields, but **reduced risk.**

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3) WHAT YOU TRIED (PLAIN ENGLISH)

The Farmer Climate Advisory Assistant (FCAA) was a simple mobile app that combined local weather data, satellite soil-moisture readings, and farmer-reported conditions.

The tool sent farmers short, actionable messages such as:

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- “Wait 5–7 days before planting.”
- “Apply half your usual fertilizer now.”
- “Irrigate lightly this week.”

It worked primarily via SMS for feature phones, with a smartphone dashboard for cooperative leaders and extension workers.

The underlying system blended:

- short-range weather forecasts,
- historical climate patterns, and
- locally calibrated crop models.

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4) FIELD CONTEXT

- **Connectivity:** ☑ Low-bandwidth / intermittent
- **Devices used:**
  - Feature phones (SMS for farmers)
  - Android tablets for extension agents
- **Languages supported:** Swahili + Dholuo + English
- **Who used the tool day-to-day?**
  - Smallholder farmers (primarily women)
  - Cooperative field officers
  - Local extension agents

Local constraints that shaped design:

- Irregular electricity
- Patchy mobile coverage
- High variability in soil quality
- Strong reliance on communal decision-making

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5) SAFEGUARDS & ETHICS

- **Consent approach:** Verbal consent for use of location and crop data, explained in local language.
- **Privacy protections:**
  - No names in central analytics
  - Aggregated village-level reporting only
- **Key risks anticipated:**
  - Overreliance on automated advice
  - Misleading forecasts during extreme weather

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- Exclusion of farmers without phones

Key risks that emerged:

- Some farmers delayed planting too long during mixed-signal weather weeks.
- Shared phones in households sometimes led to missed messages.

What mitigations worked best?

- Added a "local override" note encouraging farmers to combine advice with their own judgment.
- Weekly cooperative check-ins to discuss collective planting timing.

One ethical rule we would give others:

"AI advises; farmers decide."

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6) WHAT ACTUALLY HAPPENED

What worked

- More consistent planting timing across villages
- Better fertilizer use (less waste, better crop response)
- Increased coordination within cooperatives

What didn't work

- Limited effectiveness during prolonged network outages
- Some older farmers struggled with SMS menus

What surprised us

- Farmers shared messages verbally in markets, amplifying reach.
- Cooperative leaders became informal "data interpreters."

What we changed along the way

- **Technical:** Simplified SMS commands; added voice notes in Swahili.
- **Operational:** Created village-level "weather champions."
- **Community engagement:** Held pre-season planning meetings.

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7) OUTCOMES

Intended outcomes:

- Reduced crop loss
- More efficient use of fertilizer and water
- Greater farmer confidence

What we can actually point to:

☑ Adoption by users
☑ Cost savings
☑ Better decisions
☑ Reduced risk
☑ Improved yields

Evidence:

- 18% reduction in fertilizer waste
- 14% increase in successful planting windows
- Farmer-reported decrease in crop loss during dry spells

Who benefited most?

- Women smallholder farmers with limited extension access

Who benefited least?

- Farmers in the most remote villages with weak mobile coverage

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8) COMMUNITY EXPERIENCE

What users valued:

- Clear, simple messages
- Feeling “seen” by experts even when no one visited their village

What they distrusted:

- Advice that conflicted with traditional weather signs

Representative quote:

“The messages helped us think twice before planting — but we still listened to the sky.”

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9) COSTS & FEASIBILITY

- **Total project cost (range):** $300,000 – $420,000
- **Ongoing cost after grant:** ~$55,000/year (SMS fees + local trainers)
- **Staff required:**
  - 1 program manager
  - 2 local field coordinators
- **Hardware required:**
  - 20 tablets for extension agents
  - Basic feature phones for participating farmers

Sustainability without new funding?
Yes — if cooperatives contribute modest annual dues for SMS costs.

10) PATTERNS OBSERVED (FOR PHASE 2)

- **Pattern 1:** Offline-first and SMS-first design dramatically increased adoption.
- **Pattern 2:** Farmer trust grew when advice aligned with local knowledge — not replaced it.
- **Pattern 3:** Social sharing amplified impact beyond direct users.

11) LESSONS FOR OTHERS

Do this:

1. Design for basic phones first.
2. Blend AI advice with local practices, not against them.

Avoid this:

1. Rolling out without pre-season community meetings.
2. Assuming every farmer reads SMS the same way.

12) WHERE THIS COULD BE REUSED

Works well in:

- Rain-dependent smallholder systems

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- Regions with basic mobile coverage

Must change in new contexts:

- Crop models must match local varieties
- Language localization is essential

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13) ATTACHMENTS (hypothetical)

- Farmer training booklet (PDF)
- SMS flow diagrams
- Season impact report
- Sample anonymized dataset

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