

Solution:

Digital soil mapping with a mobile application

Submitter: (ICRISAT)

Solution Overview

What is it, and what problem does it solve? Brief 2–3 sentence description.

Digital soil mapping, facilitated by a mobile application, utilizes geospatial tools, artificial intelligence, and mobile platforms to generate high-resolution maps of soil fertility. These maps provide site-specific soil data and tailored fertilizer recommendations, ensuring precise nutrient application and enhancing farm productivity. The maps from DSM are more detailed and dynamic, enabling better management decisions for stakeholders.

Key Features & Benefits

Main components and why it is useful? Bullet points summarizing methods, tools, and value added.

Digital soil mapping relies on a few key components, including a mobile app for the easy, on-site collection of geo-referenced soil samples and field observations. These are then sent for analysis in a soil lab to determine precise nutrient levels and other properties. The results are fed into geospatial tools, along with geospatial data, to generate detailed maps of soil fertility. Artificial Intelligence (AI) analyzes patterns and generates precise, site-specific fertilizer recommendations. All this is typically managed on a cloud platform, ensuring data is stored securely and results are delivered quickly. This integrated approach is incredibly useful as it provides farmers with accurate, site-specific information to make informed decisions, leading to optimized fertilizer use, reduced costs, and ultimately, higher crop yields and better soil health.

Where It Works and Where It Can Work: Existing and potential target regions, agroecologies, or farming systems. Include examples if available.

ICRISAT's digital agriculture initiatives, including digital soil mapping, primarily focus on the dryland regions of Asia and Africa. It is specifically designed to support smallholder farmers in these areas, addressing challenges related to climate change, land degradation, and water management. The solution is broadly applicable to any farming system requiring precise soil information for sustainable intensification.

Evidence & Impact

What results has it shown? Stats, pilot outcomes, or testimonials.

Odisha (2020): 40,000 samples mapped, addressing zinc deficiencies, and enhancing productivity.

Scalability & Adoption Support

Why it can be scaled and what's needed to adopt it?

Low-cost, adaptable, partner-ready, etc.

Low-cost apps and cloud platforms support millions of farmers, working effectively for diverse soils, crops, and farm sizes. Offline functionality aids remote areas. The platform focuses on developing user-friendly mobile and web interfaces, ensuring ease of adoption by farmers and extension workers, even those with limited technical literacy.

Partners & Contact Info

Who's involved and how to connect? List of key contact and partners + email / phone.

Mukund Dhavaji Patil, +91 (40) 30713465; mukund.patil@icrisat.org

Nagarjuna Reddy, Nagarjuna.reddy@icrisat.org