Solution:

Soil test-based fertilizer recommendations

Submitter: (ICRISAT)

Solution Overview

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

Soil test-based fertilizer recommendations involve analyzing soil samples to determine nutrient deficiencies and excesses, and then providing tailored fertilizer recommendations to farmers. It addresses the widespread multi-nutrient deficiencies in soils, optimizing nutrient use, improving crop productivity, and enhancing soil health.

Key Features & Benefits

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

- Comprehensive Soil Analysis: Utilizes advanced lab methods to accurately assess soil nutrient status (macro, micro, organic carbon, pH) and other key parameters. This provides the foundational data for precise recommendations.
- Tailored Recommendations and farmers' participatory field demonstrations: Provides crop-specific fertilizer recommendations based on soil test results, ensuring optimal nutrient application, and minimizing overuse.
- Cost-Effectiveness: Helps farmers save on input costs by applying only necessary fertilizers. Increases crop yields (e.g., Odisha's Bhoochetana project estimated a 10-40 % productivity increase with nutrient management) and supports sustainable farming practices.

Where It Works and Where It Can Work

Existing and potential target regions, agroecologies, or farming systems. Include examples if available.

Successfully applied these technologies in the states of Odisha and Karnataka (Bhoochetana projects in Odisha and Karnataka), as well as in other parts of the country, with a focus on arable lands and smallholder farms. This approach is scalable to Sub-Saharan Africa and different Asian countries, where nutrient deficiencies (e.g., zinc, boron) are prevalent. It can be adapted for precision agriculture systems with variable-rate fertilizer applications.

Evidence & Impact

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

In Karnataka, the "Bhoochetana" project positively impacted over 26,000 villages and 4.2 million farmers. In Odisha, 40,265 georeferenced soil samples were analyzed, and soil health cards were issued.

Scalability & Adoption Support

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

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

Soil test-based fertilizer recommendations need to be scaled as these technologies are cost-effective, adaptable to diverse agro-ecological zones, and compatible with existing agricultural extension systems. The approach delivers high returns by improving yields and input efficiency, making it attractive to both farmers and policymakers. For successful adoption, key requirements include accessible and affordable soil testing services, farmer awareness and training, digital tools for interpreting and delivering recommendations, and strong partnerships among research institutions, agri-tech providers, and government agencies.

Partners & Contact Info

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

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