

Ten Years of the Soil Health Card Scheme: An Attempt to Revive India's Soils

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Swasth Dharaa, Khet Haraa — a healthy earth makes for a green field. This slogan captures the essence of one of independent India's most

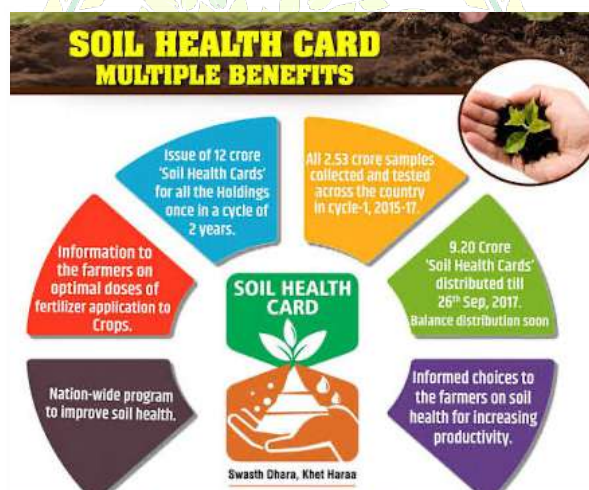
Intensive and imbalanced use of chemical fertilizers has led to a skewed nutrient ratio (N:P:K = 6.7:2.4:1) compared to the ideal 4:2:1 ratio.

far-reaching agricultural interventions: the Soil Health Card (SHC) Scheme. Launched on 19 February 2015 at Suratgarh, Rajasthan, the scheme aimed to test the soil of nearly every farm holding in the country and provide each farmer with a personalized, science-based report on soil health requirements (PIB, 2025).

After a decade, it is important to evaluate what the scheme has achieved, where it has fallen short, and what direction it should take in the future.

Why India Needed a Soil Health Card

The Green Revolution transformed India from a food-deficit nation into one of the world's leading producers of cereals. However, this progress came with hidden ecological costs, particularly soil degradation.



Farmers traditionally applied fertilizers such as urea, DAP, and potash based on convention rather than actual soil requirements. Over time, this resulted in:

- Nutrient imbalances
- Decline in soil organic carbon
- Deterioration of soil

structure

- Plateauing yields despite increasing input costs

Fertilizer-use efficiency also declined significantly, with food grain production per kg of fertilizer dropping from 13 kg in the 1970s to about 4 kg by 2010. Data from the Indian Institute of Soil Science indicates widespread multi-nutrient deficiencies across major agricultural regions, particularly the Indo-Gangetic plains.

To address these issues, the SHC Scheme was introduced to provide scientific, soil-specific nutrient recommendations.

Soil Health Card: Concept and Components

Soil health encompasses chemical, physical, and biological properties of soil. A Soil Health Card is a printed report issued for each landholding that provides information on 12 key parameters (PIB, 2025):

- **Macronutrients:** Nitrogen (N), Phosphorus (P), Potassium (K)
- **Secondary Nutrient:** Sulphur (S)
- **Micronutrients:** Zinc (Zn), Iron (Fe), Copper (Cu), Manganese (Mn), Boron (B)
- **Physico-Chemical Indicators:** pH, Electrical Conductivity (EC), Organic Carbon (OC)

Based on analysis, the card recommends balanced fertilizer use and soil amendments. Soil samples are typically collected twice a year (post-Rabi and Kharif harvests), and cards are renewed every two years for continuous monitoring.

Phase II	2017–2019	~11.69 crore
Model Villages	2019–2020	~13.53 lakh
Total (2015–2024)		230+ million

Infrastructure development includes:

- 429 static laboratories
- 102 mobile labs
- 8,752 mini labs
- 1,562 village-level labs
- Upgradation of 800 existing labs

States such as Maharashtra, Karnataka, Telangana, and Andhra Pradesh have established strong soil-testing networks.

The introduction of Village Level Soil Testing Labs (VLSTLs) in 2023 has also created rural employment opportunities, especially for youth, SHGs, and Farmer Producer Organizations. By February 2025, 665 such labs were operational across 17 states.

Impact on Farming

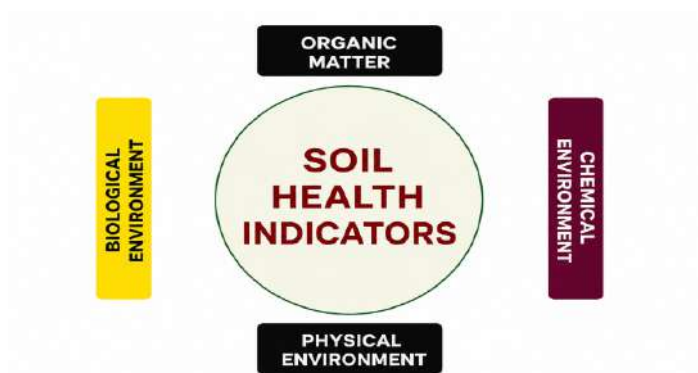
Studies indicate positive outcomes from SHC implementation:

- 8–10% reduction in chemical fertilizer use
- 5–6% increase in overall productivity
- 8–10% increase in cereal yields
- 6–7% increase in pulse yields

Key benefits observed:

- Improved fertilizer-use efficiency
- Increased use of micronutrients and soil amendments
- Reduced cultivation costs
- Enhanced farm profitability

The MANAGE impact study (Reddy, 2018) reported a 20–30% reduction in urea and DAP use in certain systems, alongside improved yields and income.



A Decade of Reach

The SHC Scheme has achieved remarkable scale:

Phase	Period	Cards Issued
Phase I	2015–2017	~10.74 crore



Persistent Gaps

Despite its success, several challenges remain:

Achievements	Persistent Gaps
230+ million cards issued	Variability in laboratory quality
Reduced fertilizer use	Difficulty in interpreting technical data
Improved productivity	Irregular soil retesting cycles
Digital integration (GIS, mobile apps)	Weak adoption tracking
Rural employment via VLSTs	Limited regional customization

Major concerns include:

- Inconsistent testing quality due to infrastructure and manpower limitations
- Limited farmer understanding of technical recommendations
- Weak follow-up mechanisms to assess long-term impact

The Road Ahead

To strengthen the SHC Scheme, the following priorities are essential:

- **Laboratory Strengthening:** Upgrade infrastructure and train skilled personnel
- **Regional Customization:** Tailor recommendations to agro-climatic conditions
- **Improved Sampling Methods:** Combine grid and point sampling for accuracy
- **Soil Variogram Development:** Enhance spatial precision of recommendations
- **On-Field Demonstrations:** Ensure standardized sample collection practices
- **Water Quality Integration:** Include irrigation water analysis parameters
- **Monitoring Mechanisms:** Establish quality control in report generation
- **Extension Services:** Increase farmer awareness and training
- **Feedback Systems:** Promote success stories for wider adoption
- **Real-Time Monitoring:** Integrate remote sensing and precision agriculture tools
- **Collaborative Research:** Strengthen partnerships among institutions and stakeholders

Conclusion

After ten years, the Soil Health Card Scheme stands as one of the largest initiatives globally to integrate scientific soil management into smallholder farming. While it has achieved extensive coverage and infrastructure development, its long-term success depends on effective utilization by farmers.

The next phase must focus on improving quality, strengthening extension systems, and ensuring meaningful adoption of recommendations. Sustainable agriculture in India ultimately depends on maintaining healthy soils—the foundation of food security and environmental resilience.

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