

## Soil Health Card – Healthy Soils for A Healthy Life *Swasth Dhara, Khet Haraa*

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### **Introduction**

In India, the current consumption of NPK ratio is 11.8:4.6:1, which is highly skewed towards against ideal ratio of 4:2:1. India is spending nearly seventy thousand crores on fertilizer subsidies every year. According to the estimates, the subsidy amount is about 5000 ₹/ha of net cropped area and about 5100 ₹/farmer resulting in excessive use of fertilizers, especially NPK at the cost of micronutrients and manure. Hence, there is a need for balanced use of fertilizers, keeping this Government of India introduced Soil Health Card (SHC) scheme across India. An SHC is meant to give each farmer the soil nutrient status of his/her holding and advice on the dosage of fertilizers and also the needed soil amendments, that s/he should apply to maintain soil health in the long run.

### **About the scheme**

On 19<sup>th</sup> February 2015, the Ministry of Agriculture launched the SHC scheme at Suratgarh, Sri Ganganagar district of Rajasthan. SHC is a printed report that a farmer will be handed over for each holding and is valid for three years. It will contain the status of soil concerning 12 parameters, namely N, P, and K (Macronutrients); S (Secondary-nutrient); Zn, Fe, Cu, Mn, and B (Micronutrients); and pH, EC, and OC (Physical parameters). Based on this, the SHC will also indicate fertilizer recommendations and soil amendments required for the farm.



One soil sample from each grid will be taken and test results will be distributed to all the farmers whose lands fall under the grid. Based on the grid system, of the total 14.1 crore ha. of net cropped area, 73 lakh grid samples are to be collected to cover 7.3 crore ha. in rainfed areas and 2.7 crore grid samples are to be collected to cover 6.8 crore ha irrigated land. That is a total of 3.46 crore grid samples in two years (1.73 crore grid samples per year). And, an average of 25000 grid samples per district/year or 29 grid samples per village/year. With this, all 11 crore farmers will be covered in two years. Every year 5.2 crore farmers need to be covered.

<b>Sample size</b>	<b>One sample/Grid</b> Grid size – 2.5 ha. in irrigated and 10 ha. in rainfed
<b>Number of samples</b>	<b>About 253 lakh soil samples will be tested every three years to generate around 14 crore soil health cards</b>
<b>Parameters</b>	<b>12 parameters- N, P, K, S, Fe, Mn, Zn, Cu, B, pH, EC and OC</b>

**Norms of sampling**

Soil Health Card Format English

<p style="font-size: 8px;">Department of Agriculture &amp; Cooperation Ministry of Agriculture &amp; Farmers Welfare Government of India</p> <p style="font-size: 8px;">State Institute of Agriculture Government of India</p> <div style="text-align: center;"> <p style="font-size: 8px;">Soil Health Card</p> </div> <p style="font-size: 8px;">Soil Health Card No. _____</p> <p style="font-size: 8px;">Name of Farmer _____</p> <p style="font-size: 8px;">Village _____ From _____ To _____</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr style="background-color: #92d050; color: white;"> <th colspan="4">SOIL HEALTH CARD</th> <th colspan="2">Name of Laboratory</th> </tr> </thead> <tbody> <tr style="background-color: #92d050; color: white;"> <th colspan="4">Farmer's Details</th> <th colspan="2">SOIL TEST RESULTS</th> </tr> <tr> <td>Name</td> <td colspan="2"></td> <td rowspan="2">S. No.</td> <td rowspan="2">Parameter</td> <td rowspan="2">Test Value</td> <td rowspan="2">Unit</td> <td rowspan="2">Rating</td> </tr> <tr> <td>Address</td> <td colspan="2"></td> </tr> <tr> <td>Village</td> <td colspan="2"></td> <td>1</td> <td>pH</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Sub-District</td> <td colspan="2"></td> <td>2</td> <td>EC</td> <td></td> <td></td> <td></td> </tr> <tr> <td>District</td> <td colspan="2"></td> <td>3</td> <td>Organic Carbon (OC)</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Pin</td> <td colspan="2"></td> <td>4</td> <td>Available Nitrogen (N)</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Aadhaar Number</td> <td colspan="2"></td> <td>5</td> <td>Available Phosphorus (P)</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Mobile Number</td> <td colspan="2"></td> <td>6</td> <td>Available Potassium (K)</td> <td></td> <td></td> <td></td> </tr> <tr style="background-color: #92d050; color: white;"> <th colspan="4">Soil Sample Details</th> <td>7</td> <td>Available Sulphur (S)</td> <td></td> <td></td> </tr> <tr> <td>Soil Sample Number</td> <td colspan="2"></td> <td>8</td> <td>Available Zinc (Zn)</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Sample Collected on</td> <td colspan="2"></td> <td>9</td> <td>Available Boron (B)</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Survey No.</td> <td colspan="2"></td> <td>10</td> <td>Available Iron (Fe)</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Khasra No. / Dag No.</td> <td colspan="2"></td> <td>11</td> <td>Available Manganese (Mn)</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Farm Size</td> <td colspan="2"></td> <td>12</td> <td>Available Copper (Cu)</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Geo Position (GPS)</td> <td>Latitude: _____</td> <td>Longitude: _____</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Irrigated / Rainfed</td> <td colspan="2"></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	SOIL HEALTH CARD				Name of Laboratory		Farmer's Details				SOIL TEST RESULTS		Name			S. No.	Parameter	Test Value	Unit	Rating	Address			Village			1	pH				Sub-District			2	EC				District			3	Organic Carbon (OC)				Pin			4	Available Nitrogen (N)				Aadhaar Number			5	Available Phosphorus (P)				Mobile Number			6	Available Potassium (K)				Soil Sample Details				7	Available Sulphur (S)			Soil Sample Number			8	Available Zinc (Zn)				Sample Collected on			9	Available Boron (B)				Survey No.			10	Available Iron (Fe)				Khasra No. / Dag No.			11	Available Manganese (Mn)				Farm Size			12	Available Copper (Cu)				Geo Position (GPS)	Latitude: _____	Longitude: _____						Irrigated / Rainfed							
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Secondary & Micro Nutrients Recommendations			Fertilizer Recommendations for Reference Yield (with Organic Manure)				
Sl. No.	Parameter	Recommendations for Soil Applications	Sl. No.	Crop & Variety	Reference Yield	Fertilizer Combination-1 for N P K	Fertilizer Combination-2 for N P K
1	Sulphur (S)		1	Paddy (Dhaan)			
2	Zinc (Zn)		2				
3	Boron (B)		3				
4	Iron (Fe)		4				
5	Manganese (Mn)		5				
6	Copper (Cu)		6				
General Recommendations							
1	Organic Manure						
2	Biofertiliser						
3	Lime / Gypsum						
International Year of Soils 2015			Healthy Soils for a Healthy Life				

**Fig 1. Soil Health Card format**

In the irrigated areas, samples will be drawn in a grid of 2.5 ha. In rainfed areas, sampling will be done in a 10ha. grid. In irrigated areas, large, medium, and semi-medium holdings will be sampled and tested holding-wise. In the case of marginal and small holdings sampling in a 2.5 ha. grid will be followed.

### Who will draw the soil sample?

The state government will collect samples through the staff of their Department of Agriculture or the staff of an outsourced agency. Soil samples are taken generally two times a year, after harvesting of *Rabi* and *Kharif* crops respectively, or when there is no standing crop in the field. A sum of ₹190 per soil sample is provided to state governments. This covers the cost of the collection of soil samples, its test, generation, and distribution of soil health cards to the farmer

### Why SHC is important?

It has been documented that, one of the major reasons for decline or stagnant crop yield is macro and micronutrient deficiencies and imbalanced use of the fertilizer. The number of nutrients deficient in Indian soils increased from one *i.e.* Nitrogen in 1950 to ten *viz.*, N, P, K, S, Zn, Fe, Mn, Mo, B, and Cu presently. Multi nutrient deficiencies coupled with the imbalance in fertilizer use are the principal factors limiting crop production and the uneconomical use of fertilizers. In most of cases, blind application of fertilizers on own experience or the bits of advice of fellow farmers are being done. So, to tackle this, a specified, documented, precise scheme is needed for fruitful, economic yields.

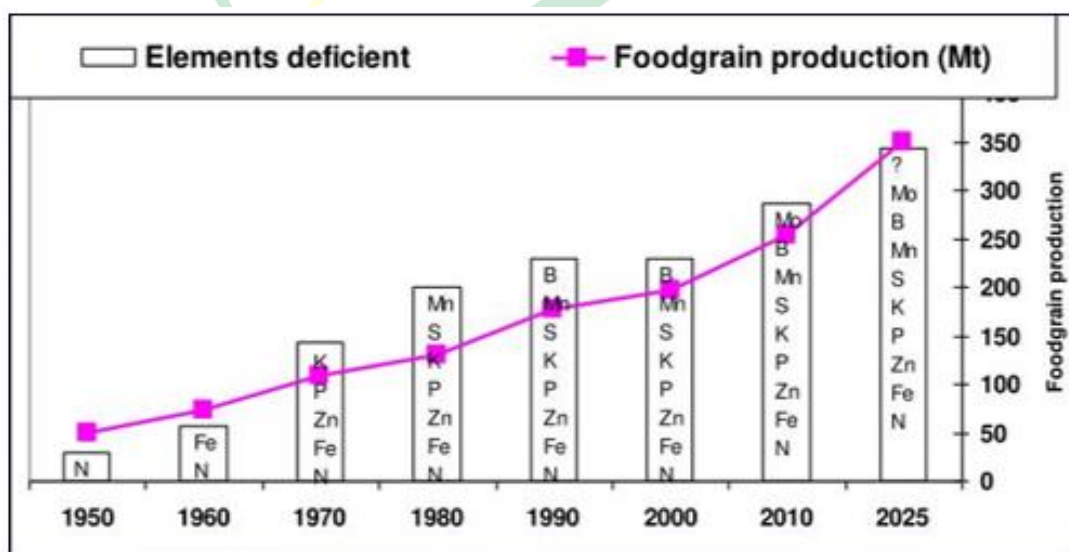
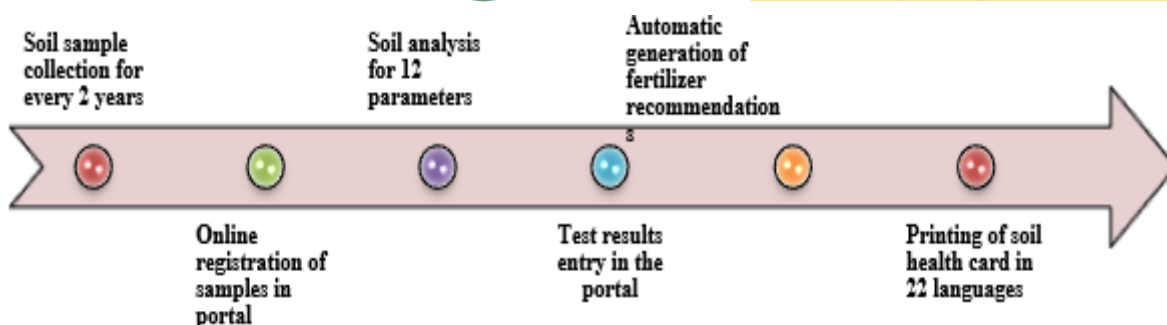


Fig 2. Emerging nutrient deficiencies



**Fig 2. Process of issuing Soil Health Card**

### Objectives of the SHCs

- To diagnose soil fertility-related constraints with standard procedures for sampling and chemical analysis and to prepare strategies for location-specific nutrient recommendations.
- To promote soil test-based nutrient balancing to manage fertility-related constraints for higher production.
- To conduct demonstrations with diversified crops to quantify the benefits of improved nutrient management practices in terms of increased crop yields and economic viability of farmers.
- To create or generate the soil database for future research and interventions.

### Constraints

- A limited number of Soil Testing Laboratories (STL) and poor infrastructure of the STL in the country limit the adoption of soil testing.
- Distance location of STL *i.e.* away from the village headquarters is the main problem in adopting soil testing.
- Lack of awareness of following the scientific method of soil sampling by the farmers.
- Many farmers are unable to understand the content and, hence unable to follow the recommended practices.

### Current status of SHCs

2023-24	Samples collected	Samples tested	SHC dispatched
cycle-I	25349546	25358141	107412648
cycle-II	277415707	27415707	12192615
Model Village	2143345	2140768	2371552



**Fig 4. Success stories of farmers from Andhra**

## Conclusion

Primary and secondary production depends on soil-based ecosystem functions such as nutrient cycling, soil health, and biotic population regulation. Soil test recommendations allow judicious or balanced use of integrated nutrient management involving major and micronutrients, organic manures, and amendments for specific sites. Moreover, finally, soil testing and its recommendations in the form of a soil health card can be a real solution for self-sufficiency in food, feed, fodder, and fibre to fulfil the daily needs of living beings and future generations without deterioration of soil health.

## Reference

[https://agritech.tnau.ac.in/agriculture/agri\\_soil\\_sampling.html](https://agritech.tnau.ac.in/agriculture/agri_soil_sampling.html)

Parewa, H., Jain, L., Mahaja, G. R., and Bhimawat, B. S. (2016). Soil Health Card: A Boon for the Indian Farmers. *Indian Journal of Plant and Soil*, 3(2), 77-81.

Reddy, A. (2018). Impact study of soil health card scheme. *National Institute of Agricultural Extension Management (MANAGE)*, Hyderabad-500030, 106.

[www.soilhealth.dac.gov.in](http://www.soilhealth.dac.gov.in)