

## SOIL HEALTH CARD: A BOON FOR HEALTHY EARTH AND GREEN FARM

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### ABSTRACT

*Soil health and fertility are paramount for achieving optimal crop yields. Implementing judicious soil fertilizer management practices is essential for maintaining Earth's well-being. Indiscriminate use of chemical fertilizers negatively impacts soil health and productivity. Soil degradation and climate change pose threats to food security and livelihoods. Restoring degraded soils requires site-specific nutrient management, facilitated by soil testing-based fertilizer recommendations. Soil health cards offer comprehensive insights into soil fertility, aiding farmers in making informed decisions. Scientific cultivation practices coupled with balanced nutrition from soil health cards enhance crop yields, soil health, and productivity, addressing contemporary concerns.*



**KEYWORDS:** climate change, food security, soil health, soil health card and profitable crop yields.

### INTRODUCTION

Soil health and soil fertility are the two key components that play an inevitable role to realize sustainable profits for the farming community. Adopting sustainable soil fertility management (SFM) practices is necessary to achieve sustainable agricultural production. The question here is how many farmers are using SFM practices. In fact, the majority of the farmers use either sub or supra-optimal levels of chemical fertilizers which result in declined soil health and inherent soil fertility. A survey by Kumar *et al.* (2021) revealed that knowledge level and adoption of SFM are relatively much less and only 8% of the farmers are aware of it and more than 65% have no knowledge regarding SFM practices. Undoubtedly, the usage of chemical fertilizers is necessary to realize crop yields. However, the usage should be optimal and scientific which means it should be in accordance with the 4 R's (right source, right time, right amount and right method). A study by Chowdary *et al.*, 2018 reported that most farmers use chemical fertilizers without knowing the actual fertility status of their fields. Ultimately, this indiscriminate use of fossil fuel-based chemical fertilizers led to reduced soil health, soil biodiversity, fertilizer use efficiency (crop: nutrient

response ratio has moved down to 8.59 in 2009-10 from 14.06 in 1990-91) and environmental pollution(Singh *et al.*, 2020).



(Photo curtesy Markus Spiske @<https://unsplash.com/photos/FwW5fhFKM6k>)

A single solution to address these problems is to optimize fertilizer usage by adopting sustainable soil fertility management practices based on soil testing reports(Singh *et al.*, 2023). Soil testis a well-proven scientific tool that helps farmers in the judicious application of chemical fertilizers by providing reliable information about nutrient deficiency and the soil’s physical and biological status/health status. But farmers themselves neglect to get a test of their soil. Therefore, keeping in view all these facts government of India launched a national flagship program namely the soil health card scheme (SHCs) on February 19<sup>th</sup> of 2015 with an aim to do a soil test of each and every individual farm and to formulate micro-level soil fertility maps(Singh *et al.*, 2020).

## WHAT IS SOIL HEALTH CARD?

SHC is a complete prescription of soil quality, from its functional characteristics to nutrient and other biological properties. It provides the farmers with crop-wise fertilizer recommendations for each type of soil. Every three years, SHC will be made available to all farmers in the nation, allowing them to apply the appropriate nutrient doses based on the results of soil tests, leading to increased soil fertility, enhanced soil health, lower costs, higher and profitable crop yields.

## OBJECTIVES OF THE SHC

- a) To provide comprehensive information about current soil health status of farm fields
- b) To know the soil nutrient status and to warn the deficiencies
- c) To find out major soil related constraints in enhanced crop production
- d) To educate farmers about importance of balanced crop nutrition

e) To restore productivity of the degraded soils to ensure better crop performance

**PARAMETERS TESTED**

SHC is a printed report that a farmer will be handed over for each of his holdings. It will contain the status of his soil with respect to 12 parameters, namely N, P, K (Macro-nutrients); S (Secondary-nutrient); Zn, Fe, Cu, Mn, Bo (Micro - nutrients); and pH, EC, OC (Physical parameters). Based on this, the SHC will also indicate fertilizer recommendations and soil amendment required for the farm.

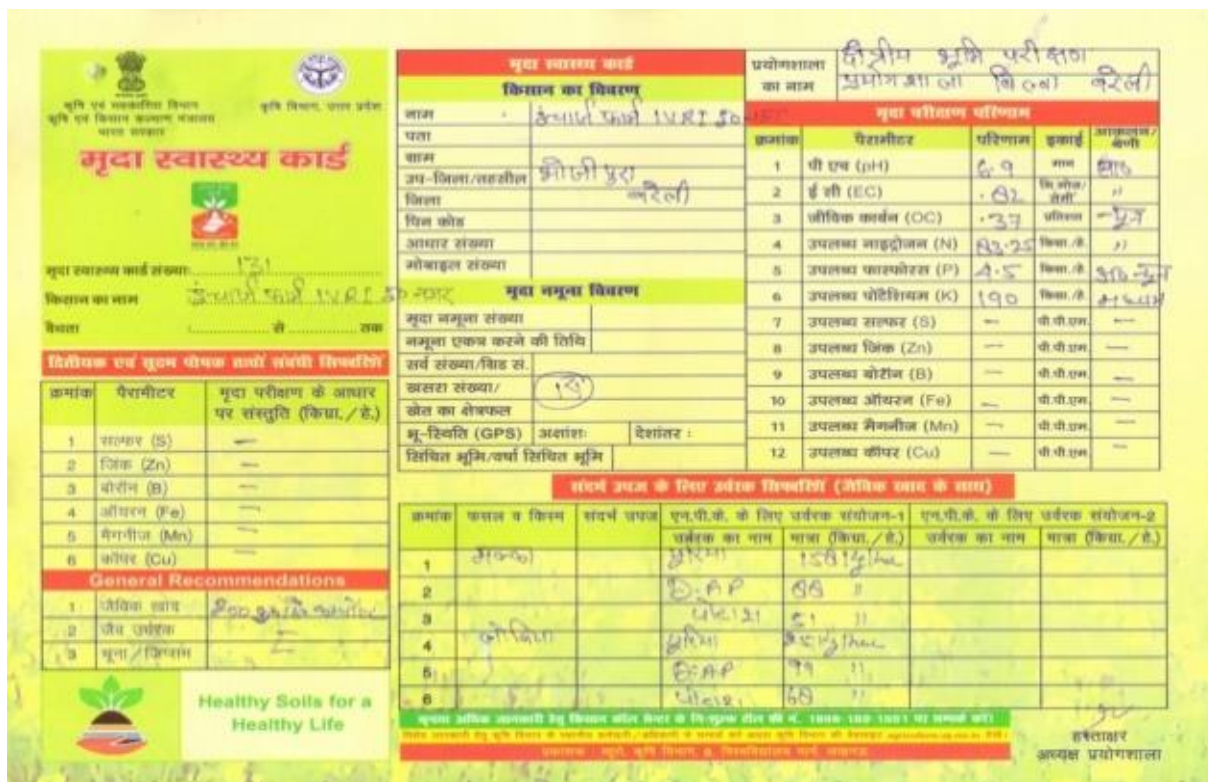


Figure 1. Soil test report and fertilizer recommendations for Fodder Farm fields, ICAR-IVRI

**ADVANTAGES OF SHC SCHEME**

- 1) Under the scheme the farm fields of farmers will tested well in time and which ensures the farmers to choose suitable crop and cropping system for particular soil type based on soil fertility status.
- 2) Regular soil testing helps the farmers to know the changes taking in their soils and remedial measures to adopt well in time.
- 3) SHC ensures the rational use of both organic and inorganic fertilizers in balance which further improves soil health, fertility and productivity on sustainable basis.
- 4) Result in reduced cost of cultivation and increased crop yields and profitability to the farmers.
- 5) Above all cut down of excess fertilizer use improves our mother earth health by reducing environmental pollution and climate change.

## RESEARCH EVIDENCE'S

Author	Key research finding
<b>Singh et al. (2023)</b>	<p>The adoption of fertilizers based on SHC; the wheat yields have increased from 14.6±0.4 q/acre to 19.1±0.4 q/ha indicating an increase of 30.80 per cent. Whereas in paddy the yields raised to 22.2±0.6 q/acre from 17.1±0.4 q/ha indicating a 29.80 per cent change in paddy yields.</p> <p>Also, the number of farmers using FYM in wheat has increased from 14 to 23 with a percent change of 64.30 and the amount of FYM usage in wheat rose to 6000 ± 1239.2 kg/acre from 2664.2± 469.4 kg/acre indicating a change of 125.20%.</p>
<b>Kumar et al. (2020)</b>	<p>Adoption of SHC recommendations resulted in reduction in use of urea and DAP by 20 to 30% in paddy and cotton. And also decreased the cost of cultivation by Rs.1000 and Rs.4000 per acre.</p>
<b>Kumar et al. (2019)</b>	<p>After following soil test-based fertilizer recommendations, fertilizer usage came down to 275 kg urea and 10 kg Zn per ha in paddy and 275 kg urea and 125 kg DAP per ha in case of wheat, indicating a net saving of ₹4,414/- per hectare per annum under Rice-wheat cropping system.</p>
<b>Chouhan et al. (2017)</b>	<p>The study has found that yield of paddy, soybean and maize increased by 19.42 per cent, 13.79 per cent and 9.6 per cent, respectively after adoption of RDF based on SHC.</p> <p>Further the net income per acre increased from Rs.11231/- to Rs.17385/- (54.8%) in paddy, from Rs.6696/- to Rs.11228 (67.7%) in soybean and from Rs. 3380/- to Rs.8105/- (139.8%) in maize after soil testing by the farmers.</p>

## CONCLUSION

The evidence presented makes it evident that the Soil Health Card (SHC) scheme represents an innovative stride towards enhancing soil health, fostering robust crop growth, and yielding profitable agricultural outputs. The fertilizer recommendations derived from SHC have proven notably efficacious and advantageous to farmers, leading to improved crop yields, augmented income, and the enhancement of soil health, fertility, and productivity. Looking ahead, sustained adoption of soil-test-based balanced

fertilizer application is anticipated to contribute to enhanced profitability, driven by healthier soil and the principles of sustainable agriculture.

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