



SOIL HEALTH CARD TO FARMERS

ABSTRACT

A guide for Aspirational District Fellows to understand the Soil Health Card scheme and envisage their role for effective implementation of the Scheme

SOIL HEALTH CARDS TO FARMERS

1. Introduction

Soil Health Management is one of the critical components under National Mission for Sustainable Agriculture (NMSA). It aims at judicious and responsible use of chemical fertilizers on farms maintaining micro and macro nutrients of soil. Department of Agriculture & Co-operation under the Ministry of Agriculture, Government of India launched a programme ‘**Soil Health Card Scheme**’ which aims to provide information to farmers on soil nutrient status and advise on fertilizer usage for different crops.

2. About Soil Health Card (SHC) and its usage

2.1 Soil Health card (SHC) is a printed report card issued to farmers in once in three years indicating the status of his soil in terms of 12 parameters. It is also accompanied by an advice on the various fertilizers and other soil amendments he is supposed to make

2.2 It contains information on the status of soil with respect to 12 parameters

Macro Nutrients	Secondary Nutrient	Micro Nutrients	Physical Parameters
1. Nitrogen (N) 2. Phosphorus (P) 3. Potassium (K)	4. Sulphur (S)	5. Zinc (Zn) 6. Ferrous/ Iron (Fe) 7. Copper (Cu) 8. Manganese (Mn) 9. Boron (B)	10. pH (Soil Reaction; acidity / alkalinity of the soil) 11. Electrical Conductivity (EC) 12. Organic Carbon (OC)

2.3 SHC is field-specific detailed report of soil fertility status and other important soil parameters that affect crop productivity. Details in a Soil Health Card includes:

- Information regarding Soil Fertility
- Dosage of fertilizer application in crops.
- Information on soil amendments of saline or alkaline soil; and
- Recommendation on integrated nutrient management.

2.4 National informatics Centre (NIC) has developed a web portal (www.soilhealth.dac.gov.in) for the generation of uniform soil health card and fertilizer recommendation. This has 4 modules:

- Registration of Soil Samples.
- Testing of Samples in Soil Testing laboratory.
- Fertilizer recommendation based on Soil Test Crop Response (STCR) equations.
- MIS Reports

3. Process of Soil Health Analysis and Distribution of Soil Health Cards

3.1 Norms for Sampling

Soil samples are drawn in a grid of 2.5 ha in irrigated area and 10 ha in rain-fed area with the help of GPS tools and revenue maps.

3.2 Collection of Soil Samples

- **WHEN:** Soil Samples are taken generally two times in a year, after harvesting of Rabi and Kharif Crop respectively or when there is no standing crop in the field.
- **WHO:** The State Government through the staff of their Department of Agriculture or through the staff of an outsourced agency collects the sample. The State Government may also involve the students of local Agriculture / Science Colleges.
- **HOW:** Soil Samples are collected by a trained person from a depth of 15-20 cm by cutting the soil in a “V” shape. It is usually collected from four corners and the centre of the field and mixed thoroughly and a part of this is picked up as a sample. Areas with shade are avoided. The sample chosen are bagged and coded. It is then transferred to soil test laboratory for analysis.

3.3 Soil Testing

WHERE and by WHOM: Soil samples are tested as per the approved standards for all the 12 parameters at any/ many of the following centres:

- At the Soil Testing Labs (STL) owned by the Department of Agriculture and by their own staff.
- At the STLs owned by the Department of Agriculture but by the staff of the outsourced agency.
- At the STLs owned by the outsourced agency and by their staff.
- At ICAR Institutions including KVKs and SAUs.
- At the laboratories of the Science Colleges/Universities by the students under supervision of a Professor/ Scientist.

3.4 Quality of soil test

The State Government will refer 1% of all the samples in a year to a ‘Referral Laboratory’ to analyse and certify on the results of Primary Laboratory. The State Government will be supported to establish Referral Laboratories as required.

3.5 Soil test report and printing

SHC Portal: After analysis, test results and relevant recommendations are uploaded into SHC portal (www.soilhealth.dac.gov.in). The reports are in public domain. The SHC Portal provide information on Progress of Soil sample collection and distribution, MIS reports, Soil Map and Farmer centric reports, technical documents and guidelines, mobile application links etc.

Progress on Target for soil sample collection, status of printing and distribution

Cycle I		Cycle II	
Target for sample collection and testing - 2,53,49,546		Target for printing and distribution of SHCs - 10,73,89,421	
Samples Collected - 2,53,49,546*	Samples Tested - 2,53,49,546*	SHCs Printed - 10,73,89,421*	SHCs Dispatched - 10,73,89,421*
Samples Registered - 2,97,23,385#	Test Results Entered - 2,59,59,304#	Farmer details entered - 8,49,86,046#	SHCs on portal - 7,15,98,014#
Cycle II		Cycle II	
Target for sample collection and testing - 2,73,99,247		Target for printing and distribution of SHCs - 12,04,52,133	
Samples Collected - 2,71,46,578*	Samples Tested - 2,60,30,853*	SHCs Printed - 9,82,44,509*	SHCs Dispatched - 9,11,43,168*
Samples Registered - 2,66,34,447#	Test Results Entered - 3,96,72,248#	Farmer details entered - 10,28,16,944#	SHCs on portal - 8,55,46,705#

MIS Reports

- Soil Health Dashboard
- Scheme Progress
- Progress of portal entries
- CSC Dashboard
- Success Stories

Farmer Centric Reports

- Track your sample
- Print your soil health card
- Print soil health card for additional Crops
- Fertilizer Dosage for Crops
- Locate soil testing laboratory
- FAQ In English
- FAQ In Hindi

Technical Documents

- Technical Documents, Guidelines & Publications
- Directories & eLearning
- Photo Gallery
- Download

IT Applications

In the SHC Dashboard, following reports are available in public domain for use.

Location Wise Reports	Comparative Reports
<ul style="list-style-type: none"> • Nutrient Status-Farmer Wise • Nutrient Status- Sample Wise • Nutrient Status-Sample Wise (for Geo Coordinates Updation) • Nutrient Status-Grid Wise • Nutrient Status-Village Wise • Nutrient Status-Block/Mandal Wise • Micro Nutrient Status - Block Wise % • Micro Nutrient Status-District Wise • Macro Nutrient Status - All - District Wise % • Macro Nutrient Status - Rating Wise % • Nutrient Status - District Wise (for pH) • Micro Nutrient Status - State Wise • Macro Nutrient Status - State Wise • Nutrient Status Dashboard • Village Wise Fertility Index 	<ul style="list-style-type: none"> • Comparative Report for Cycle I and Cycle II • Comparative Report for Cycle I and Cycle II Percentage wise

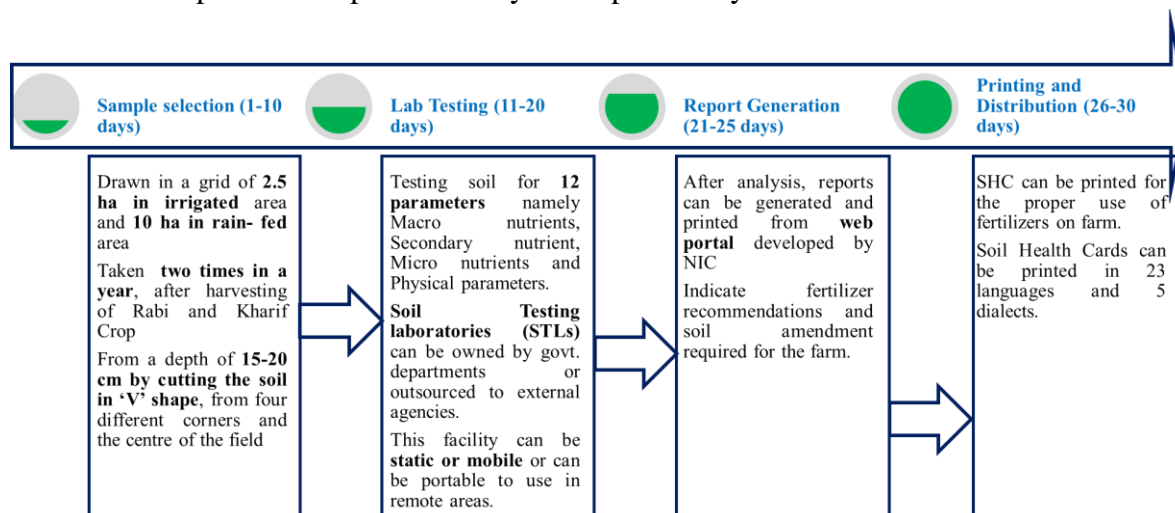
3.6 Printing and Distribution of the report: Field staff, Assistant Director (Agriculture), Soil testing lab Head and Agricultural extension officer are responsible for print and distribution

of cards to farmers. Honorarium is paid to field staff for sample soil collection, analysis and distribution of soil health cards. The Farmer can also print his/her own SHC from the portal.

3.7 Payment Per Sample

Govt. of India provides a sum of **Rs. 190** per soil sample to State Governments. This covers the cost of collection of soil sample, its test, generation and distribution of soil health card to the farmer. There is **no burden on farmer** to generate Soil health card.

The entire process starting from Soil Sample collection to Soil Test reports generation should be completed in a span of 30 days. The process cycle is show below.



3.8 Available Language for printing in SHC

The SHCs can be printed using 23 Major languages and 5 Dialects. Following are the list of languages available for printing the SHC.

Language				Dialect
Assamese	Hindi	Manipuri	Santali	Bhojpuri
Bengali	Kannada	Marathi	Sindhi	Garro
Bodo	Kashmiri	Nepali	Tamil	Khasi
Dogri	Konkani	Odiya	Telugu	Kumauni
English	Maithili	Punjabi	Urdu	Mizo
Gujarati	Malayalam	Sanskrit		

4. Soil Testing Laboratories

For timely soil health analysis and reporting, adequate number of soil testing laboratories with required manpower are the basic prerequisites. Presently, there are 3887 soil testing laboratories¹ all over India. Further ICAR institutes² also serves as soil testing/analysis facilities. Following are the Sate wise number of ICAR Institutes available for providing technical support on agricultural issues.

¹ <https://farmer.gov.in/stl.aspx>

² <https://soilhealth.dac.gov.in/Content/UserManual/ICARInstitutes.pdf>

State	Number of ICAR Institutes
Andhra Pradesh	6
Bihar	1
Chhattisgarh	0
Jharkhand	0
Maharashtra	6
Odisha	3
Telangana	4

Contact info of the ICAR Institutes can be accessed at

<https://soilhealth.dac.gov.in/Content/UserManual/ICARInstitutes.pdf>

The State Governments have established Soil Testing Labs at the district level. Following are the list of Soil testing labs available in the 35 LWE affected Aspirational Districts.

S.no.	State	District	Soil testing Laboratories (nos.)
1	Andhra Pradesh	Vishakhapatnam	41
2	Bihar	Aurangabad	1
3	Bihar	Gaya	1
4	Bihar	Jamui	1
5	Bihar	Muzaffarpur	2
6	Bihar	Banka	2
7	Bihar	Nawada	2
8	Chhattisgarh	Bijapur	4
9	Chhattisgarh	Bastar	9
10	Chhattisgarh	Sukma	3
11	Chhattisgarh	Dantewada	4
12	Chhattisgarh	Kanker	9
13	Chhattisgarh	Narayanpur	1
14	Chhattisgarh	Rajnandgaon	10
15	Chhattisgarh	Kondagaon	5
16	Jharkhand	Giridih	2
17	Jharkhand	Gumla	2
18	Jharkhand	Khunti	0
19	Jharkhand	Latehar	2
20	Jharkhand	Palamu	1
21	Jharkhand	West Singhbhum	2
22	Jharkhand	Bokaro	1
23	Jharkhand	Hazaribagh	5
24	Jharkhand	Chatra	1
25	Jharkhand	East Singhbhum	2
26	Jharkhand	Ranchi	7
27	Jharkhand	Garhwa	1
28	Jharkhand	Dumka	3
29	Jharkhand	Ramgarh	1
30	Jharkhand	Lohardaga	2
31	Jharkhand	Simdega	2
32	Maharashtra	Gadchiroli	4

33	Odisha	Malkangiri	3
34	Odisha	Koraput	5
35	Telangana	Bhadradi Kothagudem	47
Total			188

Contact info of the Soil Testing Labs can be accessed in the SHC portal by following the link: <https://soilhealth.dac.gov.in/PublicReports/STL>.

In case, the number of Soil Testing labs and their capacity are inadequate, the scheme also provides support for establishment of new Soil testing labs or upgradation of Soil Testing labs. The Ministry of Agriculture has issued a detailed guideline to set up village level soil testing labs/ mini labs. The guidelines can be accessed at: http://agricoop.nic.in/sites/default/files/guide_soil.pdf.

4.1 Village Level Soil testing Labs or Mini labs

Mini labs or soil testing labs at village level is required to promote location and crop specific sustainable soil health management and help in introducing single window approach from collection to distribution of SHC with maximum convenience to farmers.

District level empowered committee (DLEC) is responsible to select beneficiaries/entrepreneurs to run Mini labs with the support from government. Qualified beneficiary has to submit a bond to run labs for at least two cycles i.e. at least 4 years. There is provision of financial assistance in soil health card scheme to set up village level soil testing labs for up to 3000 samples per annum. Following is brief of the financial assistance for a village level mini lab.

Item	Details	Cost (lakhs)	Cost (lakhs)
Purchase of machinery & equipment, chemicals & glass-wares, miscellaneous laboratory articles.	Mini lab with accessories	1.00	2.50
	Glass wares	0.25	
	Electronic balance	0.25	
	Analytical balance	0.15	
	Drying Oven	0.35	
	Distillation unit, sieving system etc.	0.50	
Purchase of IT equipment	Computer	0.50	1.00
	Printer	0.30	
	Scanner		
	Hand held Device	0.20	
Contingency Expenditure	Fuel, Electricity and water connectivity and supply bill	0.30	1.50
	Broad Band/Telephone connection and charges	0.40	
	Purchase of stationary	0.50	
	Annual Maintenance cost (AMC)	0.30	

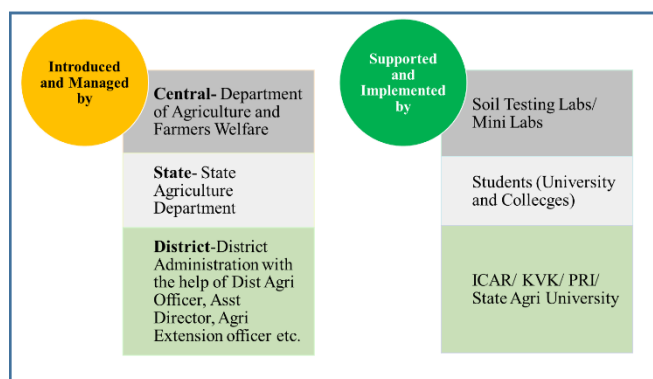
Besides this, honorarium for field staff including students and agricultural officers has been fixed for Rs. 300 per sample which includes activities ranging from sample collection, analysis of soil samples and awareness workshops/ trainings etc.

4.2 Outsourcing to an Agency

Another kind of intervention to strengthen the soil testing infrastructure is to outsource the facilities to an external agency. Government of India has recently issued guidelines for outsourcing of soil samples analysis under soil health card scheme. States are at liberty to outsource to one or more than one agencies depending upon the urgency and quantum of soil analysis work. Guidelines can be accessed at: https://soilhealth.dac.gov.in/Content/UserManual/Guidelines_Outsourcing_Analysis.pdf

5. Role of Aspirational District Fellows

Different Stakeholders are involved in the entire process of Soil health Analysis, digitalization of the analytical reports and distribution of the SHC to farmers. Following is the illustration of role played by different stakeholders.



The task of implementing and monitoring the scheme lies with the State government which includes developing and promoting soil test based nutrient management by strengthening functioning of soil test laboratories and by building capacities of district and state level staff to strike a required balance in



usage of fertilizers on farms. Besides, state government, Krishi Vigyan Kendras, Agricultural Colleges/Universities, Indian Council of Agriculture Research are also involved to build necessary technical capacities to test the soil samples.

In order to ensure, the scheme is implemented effectively at the district level, Aspirational District Fellows can play a major role. Following are the envisaged roles.

A. Diagnosis of the current state of SHC scheme implementation

- **Collate information:**
- ✓ Village wise total number of farmers in district and the status of distribution of SHC to farmers for their rain fed and irrigated land.
- ✓ Operational Status of Soil testing laboratories in district and assess their capacity
 - Number of existing STLs and their capacity (No of Sample Tests/ Annum/ lab)
 - Availability of equipment required
 - Availability of human resource including lab technicians, field staff
 - Status of STLs (Operational/non-operational)
- ✓ Number of additional soil testing labs required to meet the target.
- ✓ Village Level Soil testing Labs or Mini labs, if any.
- ✓ Readiness of District Level Executive committee (DLEC) for project formulation, implementation and monitoring under the scheme.

B. Coordination with Agricultural department and District Administration

- ✓ Status of Annual Action plan³ to implement Soil Health Card Scheme. If not prepared, support the District Agriculture Officer, to prepare the Annual Action Plan.

³ District Annual Action Plans are prepared by the Joint Director (Agriculture) with inputs from Tehsil or Mandal Agriculture Officers. The Annual Action Plan shall include broad components such as number of soil samples to

- ✓ Opportunities and challenges faced in the implementation of the scheme
- ✓ Support the Agri Department in formulation of Project proposals for mobilizing funds to make the STLs operational.
- ✓ Monthly review of the Schemes progress at District level.
- ✓ Support Agri Dept in designing the capacity building trainings and awareness camps for extension officers, field staff and farmers.
- ✓ Create mechanism to identify village level entrepreneurs for setting up of village level soil testing labs or mini labs.
- ✓ Suggest and explore the option of outsourcing the job in hand to an external agency if the existing infrastructure are not adequate.
- ✓ Establish a monitoring and tracking arrangements

End of Document

Private Agencies involved in monitoring of Soil Health card scheme

The Government of West Bengal has taken steps for remote automation of the Soil Health Card Project. This has resulted in improved monitoring of the Schemes implementation. A brief presentation on the automation initiative can be accessed at

<https://drive.google.com/open?id=1Do6e6VplehvmGeDHK1Ay9-FEeeP3J2Xu>

be drawn, number of villages to be covered; details of training programmes to increase the capacities of the field staff; financial assistance to be provided for micronutrients and soil ameliorations, etc.