

# Operational Guidelines for implementation of

## **CENTRALLY SPONSORED SCHEME SOIL HEALTH CARD**

---

### **1. Introduction**

Soil is a living medium which serves as a natural nutrient source for growth of plants. The components of soils are mineral, organic matter, water and air, the proportions of which vary and together form a system for plant growth. Soils are studied and classified according to their use. Soil surveys are made for Natural Resource Management and soil testing is conducted as part of Fertilizer Use and Management.

### **2. Nutrient Status of Soils**

**2.1** In India, intensive agriculture has resulted in impressive growth in food grain production powered by improved varieties of seeds, application of fertilizers and assured irrigation. The existing NPK consumption ratio in the country is skewed at 8.2:3.2:1 (2012-13) as against the preferred ratio of 4:2:1. A great variability is observed in fertiliser consumption among States from 250 kg / ha in Punjab, 212 kg / ha in Bihar, 207 kg / ha in Haryana to 4.8 kg / ha in Nagaland and 2 kg / ha in Arunachal Pradesh in nutrient form during 2012-13. However, imbalanced application of fertilisers have caused deficiency of primary nutrients (i.e. NPK), secondary nutrients (such as sulphur), and micronutrients (boron, zinc, copper etc.), in most parts of country.

**2.2 Site specific nutrient management** involving soil test based application of fertilizers is critical to enhance fertilizer use efficiency. A fertilizer not suitable to a soil type can be called as an incorrect fertilizer used for that soil, and in such case, fertilizer consumption ceases to be efficient to increase production. Different types of fertilizers are required to be used in acidic/ alkaline soils. Fertigation involving the use of water soluble fertilizers through drip and sprinkler irrigation is expected to give better use efficiency for water and fertilizers. Therefore, it is necessary to promote use of required

sources of plant available forms of nutrients coupled with use of soil amendments in acidic/ alkaline soils so as to enhance soil nutrient availability.

**2.3** In India, in general, blanket fertilizer recommendations are followed for N, P & K which rarely matches soil fertility need, and often ignoring secondary and micro nutrients, in various cropping systems followed by small and marginal farmers. Keeping in view the above facts, Government of India is promoting integrated nutrient management (INM) i.e. balanced and judicious use of chemical fertilizers, along with bio fertilizers and locally available organic manures based on soil testing to maintain soil health and crop productivity.

### **3. Soil Testing Programme**

**3.1** Soil testing programme was started in India in the year 1955-56 with the setting up of 16 Soil Testing Laboratories (STLs) under "Determination of Soil Fertility and Fertilizer Use" programme. Total nutrient content varies from soil to soil, and plant available forms of nutrients are chemically determined in soil testing laboratories. Till 1980, the laboratories generally used to analyze for pH, texture, electrical conductivity, organic carbon (as an index of available N), and available P and K.

**3.2** The process of setting-up of soil testing laboratories has continued with financial support from Government of India, year after year. In 2012-13, the soil analyzing capacity in the country was 128.31 lakh soil samples per annum. The soil testing facility is provided by State Governments to the farmers free of cost or with some nominal fee.

**3.3** In view of the critical role played by soil testing in ensuring balanced and efficient use of fertilizers, states have been advised from time to time to enhance and improve their soil testing programme. The State Governments are preparing district wise and also block wise fertility maps. Some states have prepared village level fertility maps too. Other states have introduced soil testing on a ten hectare grid basis and are issuing soil health cards. Some state governments have started computerization of soil test data, which the farmers can access online and advisory can be sent through SMS to their mobile phones. Several states including Gujarat, Tamil Nadu, Haryana, Karnataka and Uttar Pradesh have made commendable progress in soil testing programme. They have taken up expansion of testing facilities, popularized the soil test analysis in a campaign

mode, used information technology in delivering soil nutrient status and appropriate recommendations to farmers.

**3.4** As seen from above, no uniform norms are followed in the country for soil analysis and distribution of Soil Health Cards. There is also a need to devise a mechanism to issue soil health cards every 3 years in respect of all landholdings in order to capture the soil fertility changes occurring due to plant uptake or other natural causes. More attention is required on the follow up measures on the soil nutrient deficiencies identified in soil health cards. Along with soil health cards that diagnose fertility related constraints, small and marginal farmers need technical support to apply site specific fertilizer recommendations. Therefore, Soil Health Card Scheme is proposed for periodic testing of soil and to recommend nutrient management.

**3.5** The scheme will be implemented in all the States to promote the soil testing services, issue of Soil Health Cards and development of Nutrient Management Practices. The scheme on Soil Health will be implemented in accordance with the guidelines described here under. Cost of the interventions proposed under the scheme will be shared in the ratio of 75:25 between the Central and the State Governments.

#### **4. Scheme Objectives**

**4.1** Objectives of scheme Soil Health Card are as follows:

- i. To issue soil health cards every 3 years, to all farmers of the country, so as to provide a basis to address nutrient deficiencies in fertilization practices.
- ii. To strengthen functioning of Soil Testing Laboratories (STLs) through capacity building, involvement of agriculture students and effective linkage with Indian Council of Agricultural Research (ICAR) / State Agricultural Universities (SAUs).
- iii. To diagnose soil fertility related constraints with standardized procedures for sampling uniformly across states and analysis and design taluqa / block level fertilizer recommendations in targeted districts.
- iv. To develop and promote soil test based nutrient management in the districts for enhancing nutrient use efficiency.
- v. To build capacities of district and state level staff and of progressive farmers for promotion of nutrient management practices.

#### **5. Scheme Components**

**5.1** Issue of Soil Health Cards: Aims at periodic distribution of Soil health cards to all the farmers to provide information on soil fertility along with recommendations for application of plant nutrients.

**5.2** Training for soil analysis: One-week hands-on orientation training to soil chemists, students/JRFs for soil analysis and fertilizer recommendation in the batches of 20 participants will be organized at SAUs/ICAR Institutes.

**5.3** Financial assistance for package of nutrient recommendations: Aims to provide financial assistance to farmers to apply corrective measures for nutrient deficiencies and popularizing balance and integrated nutrient management practices for their cropping systems.

**5.4** Capacity building and regular monitoring and evaluation: Orientation for technical and line staff along with SAU/ ICAR institutions will be conducted by states.

**5.5** Mission Management: For mission management, Project Management Team (PMT) will be constituted.

## **6. Ongoing programmes on Soil Health Management**

**6.1** Soil Testing Programmes are also being implemented through National Mission for Sustainable Agriculture (NMSA) and Rashtriya Krishi Vikas Yojana (RKVY). They would continue to be implemented subject to these guidelines. The soil testing techniques & INM practices developed under this mission will be implemented in all the DAC programmes.

## **7. Scheme Structure**

### **7.1 National Level:**

The National Advisory Committee (NAC) under Chairmanship of Secretary (A&C) constituted under NMSA will be policy formulating body giving overall direction and guidance to the Mission, monitor and review its progress and performance. It is empowered to lay down and amend operational guidelines other than those affecting financial pattern and Cost Norms. The composition of the NAC is given below:-

Secretary, Department of Agriculture & Cooperation	Chairman
Additional Secretary & Financial Advisor, DAC.	Member
Additional Secretary (INM), DAC	Member
Representative from Department of Agriculture Research & Education	Member
Joint Secretary (NHM)	Member
Joint Secretary (Crops)	Member
Joint Secretary (NRM & RFS)	Member
Joint Secretary (INM)	Member Secretary

## 7.2 Executive Committee

Executive Committee (EC) will comprise of the following Members:

<b>Additional Secretary (INM)</b>	<b>Chairman</b>
Joint Secretary, Fertilisers	Member
Joint Secretary, INM	Member Secretary
DDG(NRM), ICAR, Agriculture Commissioner, Horticulture Commissioner, ADC (INM), Director, NCOF and Director, CFQC&TI	Experts Member

- (i) EC will oversee activities of the Scheme and approve Action Plans of various states in accordance with the prescribed norms.
- (ii) EC is empowered to reallocate resources across States and components and approve projects on the basis of approved financial assistance norms. EC will use its discretion in approving only those components of a project, for which cost norms/pattern of financial assistance have been approved.
- (iii) EC will meet at least once every quarter.

### 7.3 INM Division in DAC will provide :

- (a) Indicate tentative provisions for each component at the beginning of Financial Year (March-April) to facilitate the States in preparing Annual Action Plan (AAP) as per the prescribed format.
- (b) Visit the States regularly and frequently to provide guidance in organizational and technical matters.
- (c) Prepare the Agenda for the EC and NSC meetings.
- (d) Help in the implementation, monitoring and evaluation of various interventions in the mission and provide feedback reports to the NSC and EC.
- (e) In order to cater the diversified requirements of the scheme in an efficient and time bound manner, INM Division will engage technical experts.
- (f) The Project Management Team (PMT) constituted at the National level will continue to function under the leadership of the JS (INM). Consultants in Soil science, Programme Manager, Senior Programmers, Technical Assistants, and supporting staff will form part of the PMT.
- (g) The Project Management Team will have the following responsibilities:
  - i) Guide the States in organizational and technical matters.
  - ii) Help in the implementation and monitoring of the various interventions of the scheme.
  - iii) Assist the State agencies in concurrent evaluation based on case studies in identified districts and document and disseminate the success stores.

- iv) Undertake publicity/information campaign to create awareness about the scheme activities.

## 7.4 State Level

7.4.1 The State Level Executive Committee (SLEC) will comprise of the following:

<b>Agriculture Commissioner/Principal Secretary to the Government</b>	<b>Production Secretary to</b>	<b>Chairman</b>
Commissioner (Agriculture)	(Agriculture)/Director	Member Secretary
Commissioner (Horticulture)	(Horticulture)/Director	Member
Representatives of SAUs/ICAR/Other line Departments		Experts Members

The Committee shall approve the Annual Action Plan prepared by the State nodal Department. The SLEC will oversee the implementation of scheme components of the respective States through regular meetings with the nodal and other line Departments. It will also provide inputs to the Executive Committee for appropriate policy formulation.

7.4.2. State Department of Agriculture shall be the nodal Department for implementation of this scheme. It will provide necessary support to SLEC and will have the following functions:

- a) Prepare annual State Level Action Plan by compiling District-wise Action Plan and submit to the SLEC for approval and there after forward the same to EC.
- b) Receive funds from DAC for implementing / outsourcing organizations and oversee, monitor & review implementations of the programmes.
- c) Organise workshops, seminars and training programmes for all interest groups/associations at State level.
- d) Operationalise Information Communication Technology (ICT) enabled management system up to grass-root level.
- e) Conduct independent evaluation to assess the performance of the scheme in their States.
- f) 1% of total allocation to the State may be earmarked for administrative and other contingent expenses. Expenditure in excess of 1% limit will be met by the States from their own resources.

### 7.4.3 District Level

The District Level Executive Committee (DLEC) will comprise of the following:

<b>Collector</b>	<b>Chairman</b>
Joint Director (Agriculture)/Deputy Director (Agriculture)	Member Secretary
District Agriculture/Horticulture Officer	Members

**7.4.4.** DLEC will be responsible for carrying forward the objectives of the scheme for project formulation, implementation and monitoring. The office of JD(A)/DD(A) shall be the district nodal agency.

**7.4.5.** DLEC shall have the following functions:

- 1) Preparing roster of villages for sampling of soils & determine the number of samples to be drawn and analysed in the year.
- 2) Carrying a detailed analysis and interpretation of nutrient status of soils
- 3) Preparation of soil health cards and distribution.
- 4) Identification of major crops to develop nutrient management practices.
- 5) Delineate nutrient deficiencies and soil ameliorants required.
- 6) Build capacities of stakeholders.
- 7) Conduct village level meetings to disseminate site specific recommendations
- 8) Identify farmers for demonstrations and identify best nutrient management practices for selected local crops
- 9) Introduce high value crops in improved soils.

## **8. Role of Panchayati Raj Institutions (PRIs)**

**8.1** The State Government and other designated implementing agencies, to the extent possible, will ensure active participation of the Panchayati Raj Institutions (PRIs) in the implementation of this scheme.

**8.2** PRIs may also be involved in publicizing the demonstrations and training of farmers and in ensuring participation of farmers from nearby areas for widespread dissemination of technology.

## **9. Procedure for Approval & Fund Flow Mechanism**

**9.1 AAP submission:** Annual Action Plan (AAP) duly approved by SLEC along with the minutes of SLEC, shall reach DAC for examination, deliberation and final approval. INM Division in DAC will examine AAP before it is placed before the EC for consideration and sanction of AAP.

**9.2** DAC will allocate the funds to the State and Implementing Agencies based on the following parameters:

- a) 36% weightage to the proportion of irrigated area in state to total irrigated area of the country and
- b) 64% weightage to the proportion of rainfed area in state to total rainfed area of the country.
- c) The grants-in-aid/ funds would be released to the States/Implementing Agencies in Installments.
- d) States/ implementing agencies will furnish utilization certificate (UC) in the prescribed format Form GFR 19-A and physical & financial progress report

containing physical and financial targets of the previous grants-in-aid, if any, before requesting for release of subsequent installment.

- e) Unspent balance and physical & financial progress report of the previous grant will be taken in to account while sanctioning the subsequent grant.
- f) All implementing agencies are required to maintain subsidiary accounts of the grants-in-aid and get the same audited from a Chartered Accountant.
- g) Release of grants-in-aid in excess of 75% of the total amount sanctioned for the subsequent financial year shall be done only after the Annual Audited Statement of Accounts (Audited UC, Income & Expenditure Account, Receipt & Payment Account and Balance Sheet) relating to grants-in-aid released during preceding year are submitted.
- h) No release of 2<sup>nd</sup> installment would be made after January, only the re-allocated funds will be released to the better performing States. These measures would help in timely and optimum utilization of resources.

#### **10. Monitoring**

- i. The Scheme envisages a coordinated approach for monitoring and evaluation with active involvement of implementing agencies, beneficiaries and other stakeholders.
- ii. A combination of periodic desk review, field visits, and web-based mechanism will be adopted for releasing of funds, physical and financial progress and monitoring the progress of Scheme interventions at National level by INM Division in the DAC.

#### **11. Impact Assessment, Periodic Evaluation and Reporting**

- i. DAC may evaluate efficacy of this Scheme through a 'third party'. The agency will assess the efficacy, performance, outcome and shortcomings of the Scheme and recommend suitable corrective measures.
- ii. Information and communication technology will be deployed extensively for ensuring transparency in the implementation process and effective monitoring of the Scheme programme.

#### **12. Expected Outcome**

The Scheme envisages:

- i. Distribution of Soil Health Cards to all the farmers in a round of every three years to promote Soil Health Management.
- ii. It will promote balanced and judicious use of plant nutrients.
- iii. Promotion of integrated nutrient system is expected to reduce the consumption of chemical fertilizers by 20%.
- iv. The productivity of selected crops is expected to increase significantly.
- v. The demand for organic sources of plant nutrient like bio-fertilizers, organic manure, vermi-compost, slow release nitrogenous fertilizer like Neem/sulphur coated urea will increase, which in turn improve the soil fertility as well nutrient use efficiency.



### **13. Interventions**

**13.1** Interventions proposed for the Scheme includes development of modalities for soil sample collection along with standard sampling norms, quality control in the soil analysis, training of sampling staff and STL personnel, intensive use of ICT for database management for faster delivery of soil health cards in PPP mode and popularizing soil test based INM through field demonstrations/field days.

### **14. Component 1: The Soil Health Card**

**14.1** Soil health card is field-specific detailed report of soil fertility status and other important soil parameters that affect crop productivity. Besides, soil health, it also provides an advisory on soil test based use of fertilizers and amendments.

#### **14.2 Details in a Soil Health Card**

- i. Information regarding Soil Fertility
- ii. Dosage of fertilizer application in crops.
- iii. Information on soil amendments of saline or alkaline soil
- iv. Recommendation on integrated nutrient management.

A sample Soil Health Card is given at **Annexure-I**.

#### **14.3 Action Plan for Soil sampling**

**14.3.1** Diagnostic soil health assessment of farmer fields will be taken up periodically so as to issue health cards at least once in 3 years. Districts and villages within them will be selected in such a way that an action plan is in place to cover them every three years.

**14.3.2 Selection of Districts** The State Governments will prepare yearly action plan indicating number of districts to be covered, number of irrigated holdings and rainfed holdings in the selected districts, number of soil samples to be drawn from irrigated holdings and number of samples to be drawn from rainfed holdings and finally total number of samples to be drawn and tested.

#### **14.3.3 Agencies that may be involved for sampling**

- a) Directly through Agriculture Department staff and soil testing laboratories.
- b) By involving Science Colleges and students and its soil testing laboratory staff.
- c) By SAUs and its soil testing staff.

#### **14.3.4 Agencies that may be involved in testing**

- a) By outsourcing to private agencies through tender.
- b) By outsourcing soil testing laboratories.

- c) By nominating Science Colleges and providing them equipment.
- d) Directly through soil testing laboratories.

#### **14.4 Norms of soil sampling**

The quality of soil testing results and fertilizer recommendation depends upon soil sampling. For this, following scientific norms are prescribed;

- i. In the irrigated areas, samples will be drawn in a grid of 2.5 ha. In rainfed areas, sampling will be done in a 10 ha. grid.
- ii. In irrigated areas, large, medium and semi-medium holdings will be sampled and tested holding-wise. In case of marginal and small holdings sampling in a 2.5 ha. grid will be followed.
- iii. In rainfed areas, all the large holdings will be sampled and tested holding-wise and in case of medium, semi-medium, small & marginal holdings will be sampled and tested in a 10 ha. grid. A statement indicating number of soil samples as per land use and class of holding is given at **Annexure-II**.
- iv. The ideal time for collection of soil samples is between harvest of one crop and sowing/planting of other crop, when fields are vacant.
- v. The sampling depth for field crops should be kept 0 to 15 cm.
- vi. Sample has to be collected preferably with the help of stainless steel tube augur, or alternatively with a khurpi /spade or kassi.
- vii. A brief training to the soil sampling staff/students/farmers/field extension machinery would be necessary to ensure collection of representative soil sample, their labeling and transport to the STLs.
- viii. GPS co-ordinates have to be essentially recorded at the time of soil sampling which will be downloaded in the STL computer.
- ix. The target villages will use stratified sampling techniques. Samples will be collected from marginal, small and large farms to address variations that arise due to different management practices. Within each farm size class, samples will be chosen to represent all possible soil fertility variations.

#### **14.5 Soil analysis**

- i. Soil samples should be processed following standard procedures and analyzed for various parameters namely pH, electrical conductivity (EC), organic carbon (OC), and available P, K, S and micronutrients.
- ii. In addition, science colleges having soil testing laboratories may be assigned the task of soil testing. The students can do the work of soil testing under guidance and supervision of professors.
- iii. To overcome staff shortage, the testing of samples in the soil testing laboratories may be outsourced to private agencies. Alternatively, JRFs may be employed for testing of soil samples.
- iv. The soil analysis has to be completed within 3 weeks of receipt of soil samples in the STL.
- v. In addition to distribution of SHCs through post/extension staff, mechanism will be developed for online delivery of soil health cards also to the farmers using ICT.
- vi. The nodal soil test lab shall prepare time lines for scheduling the soil health cards in the district in phases. The year wise coverage of number of taluqas/ blocks may be prepared so that a continuous soil analysis takes place every three years.

#### **14.6 Fertiliser use / management**

- i. Based on soil analysis, fertilizer recommendations will be developed, considering the available infrastructure for the small holders.
- ii. The critical values for delineating deficiency levels will be tested and doses recommended for applications.
- iii. Soil test based applications for removing deficiencies will be standardised as a component of agronomic practice for the selected crops.
- iv. Timelines will be determined for nutrient status mapping based on soil fertility analysis and productivity enhancement through application of deficient nutrients. Data will be developed for diagnostic soil analysis and deficient fields in each district. Nutrient recommendations will be prepared for Kharif and rabi crops. Block wise fertilizer dosage adjusted for soil test nutrient status for various crops will be developed.

#### **14.7 Random checking of soil analysis for quality improvement**

- i. Mechanism will be developed for random checking of 1% samples of total analyzed samples by external agencies for ensuring the quality of soil analysis.
- ii. A team of Deputy Director of Agriculture (Ext.), District Agriculture Officer, Assistant Director of Agriculture (STL) and a Soil Scientist from SAU/ ICAR would jointly monitor, inspect and evaluate the functioning of STLs / other concerned agencies pertaining to issue of soil health cards in the respective districts.
- iii. Joint certificate will be issued from District Agriculture Officer, Sarpanch and Gram Sevak regarding satisfactory sample collection work. Also the list of farmers whose soil sample has been collected will be displayed at gram Panchayat Office.

#### **14.8 Norms of assistance**

Norms of assistance for soil sample analysis and issue of Soil Health Card are given at **Annexure-III**.

### **15. Component - 2: Training for soil analysis**

**15.1** One-week hands-on orientation training to soil chemists students/JRFs for soil analysis and fertilizer recommendation in the batches of 20 participants will be organized at SAUs/ICAR Institutes. Norms of assistance for training of technical staff are given at **Annexure-IV**.

### **16. Component-3:Financial assistance for package of nutrient recommendations**

**16.1** Utility of soil health cards lies in the adoption of recommendations entailed therein by the farmers. For this specific purpose, awareness programmes for farmers and soil sampling teams will be organized by experts under SAUs/ICAR institutes/Central Agricultural University (CAUs) and other agricultural colleges.

**16.2** In the target villages, financial assistance for soil test based nutrient balancing will be provided to farmers. And productivity linked nutrient recommendations will be provided. Willing farmers will be registered for application of recommended doses to

supplement organic and inorganic nutrients. Norms of assistance are shown at **Annexure-V.**

**16.3** For acidic soils (pH below normal) and alkaline/saline soils (pH above normal), Gypsum/ liming materials are to be used. Also the Agriculture Officer of the area need to be contacted for reclamation of soil.

**16.4** A field day shall be arranged at appropriate crop growth stage for farmers of the same and nearby villages. Subject matter specialists should explain the advantages of soil test based fertilization and need based use of soil amendments.

**16.5** A feedback mechanism on the adoption of soil test based prescriptions given in the soil health cards will be developed by DAC involving the experts from SAUs/ICAR institutes and State Department of Agriculture, so as to assess the real utilization of the soil health cards by the farmers.

**17. Component-4: Capacity building and regular monitoring and evaluation.**

**17.1** Orientation for technical and line staff along with SAU/ ICAR institutions will be conducted by states. Coordination committees will be constituted in the target districts for facilitating implementation for balanced nutrient practice and monetary backstopping. Identified farmers will be registered for financial support for dosage nutrients. Norms of assistance for training of farmers, officers / staff, ICT and workshops are given at **Annexure-VI.**

**18. Component-5: Mission Management:** Norms for PMT and mission management expenditure at **Annexure-VII.**

**19.** Norms of financial assistance for different components are summarized in the **Annexure-III to VII.** Total budget requirement may be seen at **Annexure –VIII.**

**Information collected at the time of collection of soil sample**

**Farmer's Name** .....

**Village:**.....**Taluka:**.....**District:**.....

**Information of Land Holding:**

Khasara no. of field under Soil Sampling:.....

GPS reading of said khasara no:

1. Longitude:.....Latitude:.....

2. Longitude:.....Latitude:.....

3. Longitude:.....Latitude:.....

4. Longitude:.....Latitude:.....

Area of field:

Name of Farm:

Geography of Land: Levelled / undulated / Low line

Irrigated / Unirrigated: Well/Tube Well/Canal

Crop grown in Last Season: Kharif:.....Rabi:.....Summer:.....

Crop to be taken in next season: Kharif:..... Rabi:.....Summer:.....

Main Crop of this particular area:

1.....2.....3.....4.....

Date of sampling .....

Signature of soil sample drawer

Name:.....

Designation:.....

Farmer's Signature:

**Soil Health Card**  
**Department of Agriculture**

Year-2014

Adhar Card No /Soil Health Card No: ...

1. Farmer's name : Block No.....
2. Village: : Taluka .....
- District:
3. Khasara no : Area: (Ha) Type of soil:
4. Details of individual soil analysis : Normal/ Acidic/Alkaline/Sodic

**4(a) Major nutrients**

Sr. No	Detail	Result	Range	Interpretation of result*
1.	pH (Soil Reaction)#	7.2	Acidic <6.5 Normal 6.5-8.2 Alkaline >8.2	Normal (Green)
2.	EC (Total Dissolve salts dSm/m)#	0.49	Normal <1 Medium 1-3 Harmful >3	Normal (Green)
3.	Organic Carbon (%)	0.26	Low <0.5 Medium 0.5-0.75 High >7.5	Low (Red)
4.	Available Phosphorous(kg/ha)	43	Low < 28 Medium 28-56 High >56	Medium (Yellow)
5.	Available Potash (Kg/ha)	254	Low < 140 Medium 140-280 High >280	Medium (Yellow)

**4(b) Secondary nutrients**

Sr. No	Detail	Result	range	Interpretation of result
1.	Sulphur(PPM)	34	Low < 10 Medium 10-20 High >20	High (Green)
2.	Magnesium	5	Low < 1 Medium 1-2 High >2	High (Green)
3.	Calcium	5	Low < 1.5 Medium 1.5-3.0 High >3.0	High (Green)

**4(c) Micronutrients**

Sr.No	Detail	Result	Range	Interpretation of result
1.	Zinc	0.4	Low < 0.5 Medium 0.5-1.0	Low (Red)

			High >1.0	
2.	Ferrous	44	Low < 5 Medium 5-10 High >10	High (Green)
3.	Manganese	11	Low < 5 Medium 5-10 High >10	High (Green)
4.	Copper	5	Low < 0.2 Medium 0.2-0.4 High >0.4	High (Green)

Color Code: \* **Green** = Sufficient (General Recommendation Dose (-) 30%)

**Yellow** = Moderate (General Recommendation Dose)

**Red** = deficient (General Recommendation Dose (+) 30%)

# **Violet** = Acidic / Sodic /Alkaline

In case of acidic/alkaline/sodic beyond normal range please consult agriculture expert for technical advice.

5. Crop wise Fertilizer Recommendation on the basis of soil analysis.  
(Supply recommended fertilizer as basal dose and in top dressing)

Note: Soil characteristics illustrated in this card is pertaining to this Khasra Number only. Soil characteristics vary from different khasra numbers. Use of fertilizers in accordance with soil analysis of individual field is more beneficial.

Season	Crop	Recommendation the basis of soil analysis (Kg/ha)							
		FYM (ton/ha)	Urea	DAP	MOP	Bentonite Sulfur	MgSO4	Zn SO4	Fe SO4
<b>Rabi</b>									
	Wheat	15	390	130	100	-	-	25	-
<b>Kharif</b>									
<b>Summer</b>									

## Statement indicating number of soil samples as per land use and class of holding

Class of holding	Net Area sown (Million Ha.)	Wholly Irrigated Area (Million Ha.)	Rainfed Area (Million Ha.)	Average size of holding (Ha.)	No. of Soil Samples (Million)			No. of SHCs holding wise / class wise (Million)
					Irrigated	Rainfed	Total	
Marginal	32	15	17	0.39	6 (15/2.5)	1.7 (17/10)	7.7	93
Small	32	11	21	1.42	4.4 (11/2.5)	2.1 (21/10)	6.5	25
Semi-Medium	34	11	23	2.71	4.0 (11/2.71)	2.3 (23/10)	6.3	14
Medium	29	10	19	5.76	1.7 (10/5.76)	1.9 (19/10)	3.6	6
Large	14	4	10	17.38	0.2 (5/17.38)	0.5 (10/17.37)	0.7	1
Total	141	51	90		16.3	8.5	24.8	139 Million or say 14 crore

Source: Agriculture Census 2010-11 (Phase-II)

Note: Criteria of samples to be taken:

- (i) Irrigated area – at 2.5 ha grid for marginal and small holdings.
- (ii) Irrigated area – one sample each holding for semi-medium, medium & large holdings (Irrigated Area/Av.size).
- (iii) Rainfed area – at 10 ha grid for marginal, small, semi-medium & medium holdings.
- (iv) Rainfed area – one sample each holding for large holdings (Rainfed Area / Av.size).



**Norms for Component-1: Financial Assistance for soil sample analysis and issue of soil health card**

**1. Sampling Cost Norms**

S.No.	Activities/Components	Annual expenditure per STL
1.	Cost of Sampling Material i.e. Cloth bag + metallic label + tag + transport @Rs. 12 (for 10,000 samples)	Rs. 1,20,000
2.	Honorarium for collection of Soil Samplings @Rs. 10 per sample.	Rs. 1,00,000
	Total	Rs. 2,20,000

**2. Cost Norms for engaging Technical staff per STL**

S.No	Activities/Components	Annual expenditure per STL
1.	Contractual services for soil analysis Two staff @Rs. 7,500 per month i.e. 15,000 per month. Plus one time training @ Rs. 5000	Rs. 1,90,000

**3. Cost Norms required for analyzing soil samples**

S.No.	Activities/Components	Annual expenditure per STL
1.	Cost of analysis of one soil sample for (chemicals) pH, OC, P <sub>2</sub> O <sub>5</sub> , K, Zinc, Iron, Copper, Manganese, Barron, requirement of gypsum/lime and texture Rs. 75 per sample. Rs.(75X10,000soil samples)	Rs. 7,50,000
2.	Misc. Expenditure (need based maintenance of lab equipment, consumables, i.e. glassware and plasticware, etc.)	Rs. 70,000
	Total per annum	Rs.8,20,000

**4. Cost Norms for Printing of SHCs.**

S.No.	Activities/Components	Annual expenditure per STL
1.	Printing @ Rs. 5 for 10 SHCs per sample for 10,000 soil samples per STL	Rs.5,00,000

## 5. Cost Norms for Distribution of Soil Health Card

S.No.	Activities/Components	Annual expenditure per STL
1.	Distribution of Soil Health Card per STL @ Rs 500 per Gram Panchayat (GP)(500X 110GP)	Rs. 55,000

## 6. Cost Norms for demonstration in one sample grid of 10 ha plus training

Sl.No.	Component	Amount (in Rs.)
1.	Subsidy on inputs	
	(a) Soil amendments @ Rs. 500/ha x10	5,000
	(b) Micronutrient @ Rs. 500/ha x10	5,000
	(c) Organic inputs @ Rs. 500/ha x10	5,000
	(d) Fertilizer @ Rs.2500/ha x10	25,000
2.	Training (one day)	5,000
	<b>Total</b>	<b>45,000</b>

## 7. Cost Norms for awareness

S.No.	Activities/Components	Annual expenditure per STL
1.	Awareness creation to be carried out by STLs through print and electronic media and awareness campaign about soil test based nutrient application / mission management by STLs	22,000

## 8. Global Positioning System (GPS)

Sl.No.	Component	Amount (in Rs.)
1.	GPS equipment for bench mark soil samples and visiting same spot to evaluate soil fertility status after a period of time & also for developing fertility maps. 5 GPS @ Rs.6000 for STL	30,000

**Abstract : Cost Norms of one soil sample**

<b>S.No.</b>	<b>Activities/Components</b>	<b>Total expenditure per STL</b>
1.	Sampling Cost@ Rs 22 per sample x10,000	2,20,000
2.	Fund for engaging contractual services & training per STL	1,90,000
3.	The funds required for analyzing soil samples ( 10,000 X Rs. 75 ) ie cost of chemicals + Misc Expd.(@70000/per LAB)	8,20,000
4.	Printing @ Rs. 5 for 10 SHCs per sample for 10,000 soil samples per STL.	5,00,000
5.	Distribution of Soil Health Card per STL@ Rs 500 per GP(500X 110GP)	Rs. 55,000
6.	Demonstration in one sample grid of 10 ha @ Rs. 4,000/ha plus training Rs. 5,000	45,000
7.	Funds for awareness/mission management/STL	22,000
8.	5 GPS @ Rs. 6,000 per STL	30,000
	Total funds required per STL of 10,000 sample analyzing capacity	18,82,000
	<b>Cost of one Sample</b>	<b>Rs. 188 or Say Rs. 190/-</b>

**States shall use STLS or outsource analysis and issue of SHC @ Rs. 190/ sample.**

**Norms for Component-2 :Training of Technical Staff**

Expenditure for imparting one week orientation training to soil chemist for soil analysis and fertilizer recommendation in batches of 20 participants.

S.No.	Components	Expenditure involved (Rs.)
1.	Boarding and lodging charges @ Rs. 400 per person per day for 20 participants.	40,000
2.	Stationary & Soil testing manual.	5,000
3.	Honorarium to guest speaker @ Rs. 1,000 for 5 speakers	5,000
4.	Accommodation charges for Halls & other training facilities including lab work.	10,000
	Training for one orientation module/STL	60,000
	Cost for 800 orientation training module for 2014-15	480 lakh
	Cost for 500 orientation training module for 2015-16	300 lakh
	Cost for 200 orientation training module for 2016-17	120 lakh
	Total	900 lakh

**Norms for Component-3 :Financial Assistance for Micro-Nutrients and soil ameliorants**

Gypsum/phosphogypsum / bentonite sulphur	50% of the cost of material limited to Rs.700 per ha.
Micronutrients	50% of the cost limited to Rs.500 per ha.
All Bio-fertilisers	50% of the cost limited to Rs.300 per ha.
Lime/liming materials	50% of the cost material limited to Rs.1000 per ha.
<b>Total</b>	Rs.2500/ha
Cost for 1 <sup>st</sup> year (60000 farmers)	Rs.15 crore
Cost for 2 <sup>nd</sup> Year (90000 farmers)	Rs.22.50 crore
Cost for 3 <sup>rd</sup> Year (90000 farmers)	Rs. 22.50 crore
<b>Total</b>	Rs.60.00 crore

Nutrients are illustrative and may be developed by States on basis of soil analysis

**Cost Norms for Component-4 :Capacity Building****Cost Norms for Training of Farmers**

S.No.	Components	Rate	Amount (Rs.)
1	Training material/stationery/venue/cost/ Audio-visual aids etc.	Rs.2500 per training	2500.00
2.	Dormitory/Travel/Transport etc.	Rs.4500 per training	4500.00
3.	Honorarium to SMS/Scientist etc.	Rs.250/lecture X 8 lectures in two days.	2000.00
4.	2 Meals / Refreshment for farmers	Rs.250/day X 30 farmers X 2 days.	15000.00
	Total		24000.00

**Cost Norms for Capacity Building - Training of Staff (Agriculture / ICAR)**

S.No.	Components	Rate	Amount (Rs.)
1	Training material/stationery/venue cost/Audio-visual aids etc.	Rs.5000 per training	5000.00
2.	Lodging/Travel/Transport visits etc.	Rs.15000 per training	15000.00
3.	Honorarium to Trainer/Scientist	Rs.500/lecture X 8 lectures in two days.	4000.00
4.	2 Meals / Refreshment for officers/extension workers.	Rs.300/day X 20 officers/extension X 2 days.	12000.00
	Total		36000.00

**Cost Norms for Use of ICT**

S.No.	Components	Rate	Amount (Rs.)
1.	Promoting use of ICT tools like "Nutrient Manager" developed by IRRI and "Nutrient Expert" developed by International Plant Nutrient Institute for nutrient recommendation.	Rs.12.93 lakh per State (for 29 States)	3,75,00,000

### Cost Norms for Organisation of Workshop

S.No.	Components	Rate	Amount (Rs.)
1.	Workshops to create awareness among farmers and soil sampling teams by SAUs/ICAR experts	Rs.1.50 lakh per workshop (for 29 States)	44,00,000

### Abstract for Financial Norms for Capacity Building

S.No.	Activities/Components	Total expenditure crore
1.	Training for farmers Rs.24,000 X 20 trainings X 29 States	1.39
2.	Training for staff : Rs.36,000 x 20 trainings x 29 States	2.09
3.	I.C.T @ Rs.12.93 lakh X 29 States	3.75
4.	Workshops @ 1.5 lakh x 29 States	0.44
	Total for States (for each year)	7.67

### Norms for Component-5:Mission Management

For Mission Management Advisors / Consultants, Programme Manager, Senior Programmer, Technical Assistants, part time need based consultants, Stenographer, Data Entry Operators and Attendants/Peons will be engaged on remuneration / honorarium paid to similar staff engaged in Mission Management Cells / Technical Support Groups established for other plan schemes or mission being implemented by DAC in consultation with IFD.

Expenditure on management of the scheme will be met out of 1% of the allocation earmarked for administrative and other contingent expenses. Excess expenditure, if any, will be borne by the Implementing Agencies from their own resources.

#### **Abstract: Financial Norms for Programme Management Staff**

S.No.	Activities/Components	Total expenditure (Rs in lakhs)
	<b>1<sup>st</sup> Year</b>	
1.	Staff at national level Rs.1.00 lakhs x 12	12.00
2.	Staff at state level approx. Rs. 0.35 lakhs X 29 x 12	121.15
	<b>Total</b>	133.15 Or say 1.33 crore
	<b>2<sup>nd</sup> Year</b>	
1.	Staff at national level Rs.1.50 lakhs x 12	18.00
2.	Staff at state level approx. Rs. 0.52 lakhs X 29 x 12	182.00
	<b>Total</b>	200.00 Or say 2 crore
	<b>3<sup>rd</sup> Year</b>	
1.	Staff at national level Rs.1.50 lakhs x 12	18.00
2.	Staff at state level approx. Rs. 0.52 lakhs X 29 x 12	182.00
	<b>Total</b>	200.00 Or say 2 crore
	<b>Total all 3 years</b>	
1.	Staff at national level	48.00
2.	Staff at state level	485.15
	<b>Total</b>	533.15 Or say 5.33 crore



## BASIC QUALIFICATION, EXPERIENCE AND HONORARIUM OF ADVISORS/CONSULTANTS

Level and post	Educational Qualification & experience
1. Advisors/ Consultants	1. Doctorate Degree in Soil Science/having at least 15 years of field experience in soil analysis, interpretation of analysis results, issued of soil health cards, demonstrations, etc.
	2. Ability to analyze data and preparation of projects, writing reports/seminar notes/articles as evidenced by publication in national and international journals.
	3. The person should have the ability of team leadership & motivation.
1. Programme Manager	1. At least 10 years experience of working in administration
	2. Working knowledge of Computer Application.
3. Senior Programmer	1. Masters degree in Computer Science from recognized university/ institutes with 4 years experience in web based applications and independently handling of projects
4. Technical Assistants	1. Master degree in Agronomy/Soil science/Agriculture Extension with specialization in soil analysis, interpretation of analysis results, issued of soil health cards, demonstrations, etc. Knowledge of computer essential.
	2. Person with experience of research and extension will be given preference.
5. Part time need based Consultants (Total 12 men months)	1. Doctorate Degree in Agronomy/ Agriculture Extension/Soil Science having at least 15 years of field experience in soil analysis, interpretation of analysis results, issued of soil health cards, demonstrations, etc. or 5 years experience in the rank of Additional Commissioner in Government of India.
	2. Ability to analyze data and preparation of projects, writing reports/seminar notes/articles as evidenced by publication in national and international journals.
	3. The person should have the ability of team leadership & motivation.
6. Stenographer (1)/ Data Entry Operator (4)	1. Graduate with six month computer course.
	2. Minimum 1 year experience in relevant field of work.
7. Attendant/ Peon (2)	1. Matriculate

While engaging consultants/Technical Assistants under the Mission the following guidelines may be followed:

### **Duties:**

### **Consultants**

- To provide technical guidance to the JS(INM) on matters related to interventions proposed in the Mission. To develop standardized formats for sub-Mission of Action Plans
- To assist State in planning, formulation of SHCM action plans, whenever required.
- To provide technical assistance to SHCM staff in scrutinizing the action plans received from the States.

- To Establish time-lines and indicators for completion of each activity
- To supervise the quality of implementation of various interventions proposed in the Mission.
- To assist JS(INM) and other senior officers in synchronizing and synergizing with other divisions of DAC; State governments; State agriculture Universities; ICAR research institutions and other stake holders on technical front.
- To constitute teams for monitoring the progress of works in the States and provide technical guidance to them in conducting Monitoring and evaluation.
- To coordinate the work of State Project Management Team and District Management Team.
- To visit the States periodically to provide technical guidance and impart knowledge about best practices.
- To assist in the conduction of specific central and regional workshops.
- To analyze the data received from various States and to come up with suggestions wherever improvements are required in the execution of the activities.
- Documentation and dissemination of contribution of various interventions of cluster demonstration and success stories.
- To render overall help to the technical staff working in the cell.
- To perform other tasks specified by JS(INM).

## **TECHNICAL ASSISTANTS**

- To procure, compile and analyze the State wise data relating to the proposed interventions of the Mission activities.
- To maintain relevant records/ file and data of the various Mission activities.
- To assist in developing uniform formats for submission of action plans; monitoring and evaluation formats.
- To scrutinize the action plans for the interventions proposed.
- To undertake field visits to assess the progress of the Mission activities.
- To assist senior officers of the SHCMcell on all technical matters.
- To undertake other works assigned by the Mission director from time to time.

## Year-wise budget requirement

(Rs in crore)

S.No.	Component	2014-15	2015-16	2016-17	Total
1	Soil Health Cards @ Rs.190/sample 1 <sup>st</sup> Year - 55 lakh 2 <sup>nd</sup> Year - 97 lakh 3 <sup>rd</sup> Year - 96 lakh Total – 248 lakh	104.50	184.30	182.40	471.20
2.	Training for technical staff @ Rs.60,000/- training  1 <sup>st</sup> Year - 800 trainings 2 <sup>nd</sup> Year - 500 trainings 3 <sup>rd</sup> Year - 200 trainings Total – 1500 trainings	4.80	3.00	1.20	9.00
3.	Financial assistance @ Rs.2500/ha 1 <sup>st</sup> Year - 60000 farmers/ year 2 <sup>nd</sup> year – 90000 farmers / year 3 <sup>rd</sup> year – 90000 farmers / year (Total – 240000 farmers)	15.00	22.50	22.50	60.00
4.	Capacity building and use of ICT in states	7.67	7.67	7.67	23.01
5.	Mission Management	1.33	2.00	2.00	5.33
	Grand Total	133.30	219.47	215.77	568.54
	GOI share 75%	99.98	164.60	161.83	426.41
	State share 25%	33.32	54.87	53.94	142.13

**ANNUAL ACTION PLAN**

State .....

Year .....

S. No	Component	Physical	Financial	Remarks
<b>1.</b>	<b>Soil Health Cards</b>			
(i)	No of districts to be covered			
(ii)	No of taluqas /blocks to be covered.			
(iii)	No of villages to be covered.			
(iv)	No of irrigated holdings			
(v)	No of rainfed holdings			
(vi)	No. of samples to be drawn from irrigated holdings			
(v)	No. of samples to be drawn from rainfed holdings			
(vi)	Total No. of Soil samples to be collected and analysed.			
(vii)	Total No. of Soil Health Cards to be issued.			
(viii)	Amount required.			
<b>2.</b>	<b>Training of Technical Staff</b>			
(i)	No of one week orientation training for soil chemist for soil analysis and fertilizer recommendation in batches of 20 participants.			
(ii)	Amount required @ Rs. 60,000/- per training			
<b>3.</b>	<b>Financial assistance for Micronutrients and soil ameliorants</b>			
(i)	No of farmers to be covered under :-			
	(a) Gypsum/Phospho Gypsum			
	(b) Micronutrients			
	(c) Biofertilizers			
	(d) Liming materials			
(ii)	Area to be covered			
	(a) Gypsum/Phospho Gypsum			
	(b) Micronutrients			
	(c) Biofertilizers			
	(d) Liming materials			
	Total area to be covered.			
(iii)	Amount required			
<b>4.</b>	<b>Capacity Building</b>			
(i)	Farmers Training			

	(a) No of 2 days farmers training to be organized with 30 per participants.			
	(b) Amount required for training @ Rs. 24,000/- per training			
(ii)	Training of staff (Agriculture/ICAR)			
	(a) No of 2 days Staff training to be organized with 20 per participants.			
	(b) Amount required for training @ Rs. 36,000/- per training			
(iii)	Use of ICT (details to be provided by State separately)			
(iv)	Workshops to create awareness among farmers and soil sampling themes by SAUs/ICAR Experts			
<b>5.</b>	<b>Mission Management</b> (Separate proposals to be submitted which should not exceed 1% of total budget).			
	<b>Grand Total</b>			
	GOI share 75%			
	State share 25 %			