

*Sustainable
Soil Fertility Management*

SOIL TESTING

A. Soil Testing Programme in AP

Soil sampling and Soil testing programme is organized in a systematic manner to evaluate the fertility status and to identify the problems (Alkalinity/Salinity) if any to improve fertility and to apply fertilizers based on soil test data.

Objectives of the scheme

- ❖ To evaluate the fertility status
- ❖ To identify and reclaim the problematic soils
- ❖ To promote soil test based fertilizer usage
- ❖ To adopt balanced and integrated use of fertilizers and thereby reducing cost of cultivation
- ❖ To improve soil health

Soil Testing infrastructure

S.No	Type of Soil testing Lab	Nos	Facility
1	Regional Soil Testing Lab	1	Macro & Micro Nutrient & Water analysis
2	District level Soil Testing Labs	16	Macro & Micro Nutrient & Water analysis
3	Mobile Soil Testing Labs	13	Macro & Micro Nutrient & Water analysis
4	Soil Testing Labs in Agriculture Marketing Committee	30	Macro & Micro Nutrient analysis
5	Minilabs @ 2 per mandal	1328	Macro & Micro Nutrient analysis
Total		1388	

a) Soil Sample Collection and Analysis

- ❖ The GoI has launched Soil Health Card Scheme on 19.02.2015 with an objective to issue soil health cards to farmers covering all the land holdings within a period of three years. At present the farmers are covered once in two years.
- ❖ The soil samples should be drawn in a grid of 2.5 ha in irrigated areas and 10 ha grid area in rain fed.
- ❖ Soil samples are collected at village level with the help of GPS/Mobile App and these samples will be sent to the Lab for testing of 12 parameters i.e, pH, EC, OC, N, P, K, S, Zinc, Iron, Copper, Manganese and Boron.
- ❖ As per the instructions of Government of India, 13.58 lakh no.of soil samples for collection & analysis and 71.15 lakh no. of Soil Health Cards are to be distributed to the farmers for 2nd cycle of SHC Scheme for 2 years i.e 2017-18 &2018-19 and it is planned to complete by March 2019.
- ❖ Soil Sample collection is being taken up in systematic manner using GPS/ Mobile App to record the coordinates on the site of sample collection. 3975 no.of GPS instruments were supplied to the mandal @ 6/mandal in 2 spells.

- ❖ During the year 2017-18, 6.83 lakh no. of soil samples (101percent) were collected and 6.57 lakh no.of samples were analysed (97percent) as against the target of 6.79 lakh no.of soil samples as on 08-05-2018 and a target of 35.57 lakh no.of soil health cards are printed. Soil health card distribution will be completed by 1st week of June 2018.
- ❖ It is proposed to collect 6.79 Lakh no. of soil samples and to distribute 35.57 lakhs no.of soil health cards during 2018-19 and it will be completed by March 2019.
- ❖ It is also proposed for conducting awareness trainings to farmers on importance of Soil health.
- ❖ The annual analyzing capacity of existing labs is being enhanced by providing advanced equipment namely AAS (Atomic Absorption Spectrometer), UV-Spectro photometers, Kelplus units in all the STLs and MPAES (Microwave Plasma Atomic Emission Spectroscopy) for micronutrient analysis in a phased manner.
- ❖ The staff in the soil testing labs and field have been imparted trainings pertaining to GPS usage, Mobile App usage and Atomic Absorption Spectrophotometer and other latest equipment usage.



b) Distribution of Soil Health Cards

- ❖ Immediately after analysis, the results will be uploaded in soil health card portal i.e NIC portal.
- ❖ Soil health cards will be distributed to farmers before commencement of season duly conducting interactive meetings on soil test results to promote balanced and Integrated Nutrient Management (INM).

The District wise soil sample collection and number of Soil Health Cards to be distributed during 2018-19 is enclosed in Annexure –I.

B. Soil Health Management under National Mission for Sustainable Agriculture (NMSA)

Soil Health Management is one of the most important interventions under National Mission for sustainable Agriculture (NMSA). SHM is aiming at promoting location as well as crop specific sustainable soil health management including residue management, organic farming practices by way of creating and linking soil fertility maps with macro & micro nutrient management, appropriate land use based on land capability, judicious application of fertilizer and minimizing the soil erosion.

Objectives

1. To facilitate and promote Integrated Nutrient Management (INM) through judicious use of chemical fertilizers, including secondary and micro nutrients, in conjunction with organic manures and bio-fertilizers, for improving soil health and its productivity.
2. To strengthen soil testing facilities and provide soil test based recommendations to farmers for improving soil fertility and economic return to farmers.
3. To improve soil health through sustainable organic farming.
4. To facilitate and promote usage of soil amendments for reclamation of alkaline soils for improving their fertility and crop productivity.
5. To promote usage of micro nutrients for improving fertilizer use efficiency
6. To upgrade the skill and knowledge of technical personnel and farmers through trainings and exposure visits including demonstrations on farmers fields regarding conceptualization of Integrated Nutrient Management.
7. To ensure quality control of fertilizers through strengthening of existing quality control on fertilizer facilities in FCO laboratories as well as bio pesticide laboratories of the state for effective implementation of “Fertilizer Control Order”.

The proposals submitted to GoI for release of funds for implementation of Soil Health Card Scheme and Soil Health Management for the year 2018-19 are enclosed in **Annexure-II & III**

C. Integrated Nutrient Management Scheme

Introduction

Analysis of soil samples has indicated that 40-49 percent of soils in Andhra Pradesh are potentially deficient in Zinc, 12 percent in Iron, 6 percent in Manganese, 3 percent in Copper (Cu), 33 percent in Boron (B), 11 percent in molybdenum (Mo) and 20-24 percent of soils in AP are deficient in Sulphur. Basal application to soil and/or foliar sprays of these nutrients have shown significant effect on crop yields.

It has been observed by preliminary soil mapping exercise undertaken by the department of agriculture with ICRISAT and Other Organizations, soil health card scheme 1st cycle large scale deficiencies of multiple nutrients such as micro and secondary nutrients like Zinc, Boron, Sulphur, Iron and in some cases copper are recorded below critical limits which are reducing the response to added N,P,K nutrients also. In most cases, farmers attribute the deficiencies caused by micronutrients to macronutrients and in turn add more quantities of N,P,K fertilizers to soils which do not result in increased crop yields.

Objectives

1. To create awareness on identification of deficiency symptoms of nutrients in crops
2. Increase awareness among farmers about the soil health to enable sustainability of agriculture production.

3. Reduce usage of Nitrogen and phosphatic fertilizers and emphasize the importance of Integrated Nutrient Management based on soil test recommendations

Benefits

1. Improvement and maintenance of soil fertility and soil health
2. Regulated nutrient supply for optimum crop growth
3. Increased productivity

Guidelines for Implementation of the Programme

- Micronutrients like Zinc Sulphate, Borax, and Gypsum are supplied to farmers on 100 percent subsidy through aadhar enabled biometric system based on soil test results on production of Soil Health Card.
- Gypsum is supplied for Reclamation of alkaline soils also.
- Zinc Sulphate shall be supplied to paddy, maize, cotton, groundnut and other crops @ 50Kg/ha for basal application and Zinc Foliar spray @ 0.5Kg/ha.
- Gypsum shall be supplied to Paddy in moderately alkaline soil, Groundnut @ 500Kg/ha and also for reclamation of alkaline soils @ 1000Kg/ha.
- Boron will be supplied to cotton and groundnut for soil application @ 2.5kg/ha.

Quantity of micronutrients proposed to be supplied during 2018-19

S.No	Name of the input	Qty proposed to be supplied in M.tons	Area proposed to be covered in lakh ha
1	Zinc Sulphate 21%	6600	1.75
2	Zinc Sulphate 33%	135	1.525
3	Zinc EDTA 12%	135	1.525
4	Borax 10.5%	300	1.20
5	Gypsum	75000	1.50
	Total	82170	7.50

District wise physical and financial targets for the year 2018-19 are given in Annexures IV, V, VI.

- Crop cutting experiments will be organized @ 10 per mandal and one mandal level demonstration will be organized to assess the impact of micronutrients on crop productivity.

Subsidy Pattern

The secondary and micro nutrients are supplied to the farming community under 100 percent subsidy

Budget Source

A financial outlay of Rs. 5,987.05 lakhs is allocated under State Development Plan for the year 2018-19.

ANNEXURE I

District wise Soil Sample Collection, Analysis and Soil Health Cards distribution Targets for the year 2018-19

S.No	District	Soil Samples Target for the year 2018-19	Soil Health Cards distribution Target for the year 2018-19
1	Srikakulam	41528	249168
2	Vizianagaram	36104	215000
3	Visakhapatnam	34360	232867
4	East Godavari	61084	232237
5	West Godavari	73582	338576
6	Krishna	56071	262915
7	Guntur	81777	370450
8	Prakasam	40563	361095
9	S.P.S.R.Nellore	55791	228508
10	Chittoor	30278	166298
11	Y.S.R. Kadapa	38832	202126
12	Ananthapuramu	52044	362000
13	Kurnool	77364	336426
Total		679377	3557664

Annexure-II

Physical Targets and Financial allocation for Soil Health Card Scheme in 2018-19

S.No	Component	Unit	Phy	Financial Rs.in Lakhs		
				GoI Share (60%)	State Govt Share (40%)	Total (100%)
1	Soil Health Cards					
	Total No of Soil samples to be collected and analyzed @ 300/- per sample	No	679377	1222.88	815.25	2038.13
2	Training to Soil Chemist					
	No of one week orientation training for soil chemist for soil analysis and fertilizer recommendations in batches of 20 participants @ Rs. 60000/- per training	No	26	9.36	6.24	15.6
3	Demonstrations/Assistance to Farmers					
		No	4206	63.09	42.06	105.15
4	Farmers Training					
	No of 2 days farmers training to be organized with 30 participants @ Rs.24000/- per training	No	30	4.32	2.88	7.2
5	Staff Training (Agriculture/ICAR)					
	No of 2 days staff training to be organized with 20 participants @ Rs.36000/- per training	No	21	4.536	3.024	7.56
	Amount Required for Campaign @ Rs.1,00,000 per Training	No	3	18	12	30
6	ICT	0	Lumpsum	12.702	8.468	21.17
7	Work shop	No	1	0.9	0.6	1.5
8	Mission Management	0		26.172	17.448	43.62
	Grand Total			1361.96	907.97	2269.93

Annexure-III
Action Plan for Soil Health Management Scheme (NMSA) 2018-19

S.No	Components	Physical (No.)	Financial Central Share, 60%	Financial State Share, 40%	Total
			(Rs.In Lakhs)	(Rs.In Lakhs)	
1	Strengthening of existing Static Soil Testing Laboratories	47	1128	752	1880
2	Strengthening of Bio & Organic Quality Control Lab, Nellore	1	9	6	15
3	Strengthening of the existing State Fertilizer Quality Control Laboratories	3	36	24	60
4	Distribution/Promotion of Micronutrients	2.0 lakh Ha	600	400	1000
5	Mission Management & Project Monitoring	-	35.46	23.64	59.1
Grand Total		2.51	1808.46	1205.64	3014.1

ANNEXURE IV

Districtwise tentative targets for distribution of Micro nutrients and Gypsum on 100 percent subsidy under “Integrated Nutrient Management” scheme during 2018-19

S.No	District	Zinc sulphate				Total	Boron Basal 10.5%	Gypsum Bagged & Bulk	Grand Total (col.6+col.7+c ol.8)
		Basal 21%	Foliar spray 33%	Foliar spray 12%	Foliar spray 12%				
1	2	3	4	5	6	7	8	9	
1	Srikakulam	550	10	10	570	2	1200	1772	
2	Vizianagaram	550	12	11	573	10	1500	2083	
3	Visakhapatnam	350	12	12	374	5	800	1179	
4	East Godavari	550	10	10	570	16	1200	1786	
5	West Godavari	550	10	10	570	17	2000	2587	
6	Krishna	500	10	10	520	20	1800	2340	
7	Guntur	500	10	11	521	20	2000	2541	
8	Prakasam	500	12	12	524	25	5000	5549	
9	S.P.S.R. Nellore	900	11	10	921	10	7500	8431	
10	Chittoor	350	8	8	366	55	14000	14421	
11	Y.S.R. Kadapa	400	10	10	420	20	7500	7940	
12	Anantapuramu	350	10	10	370	85	22000	22455	
13	Kurnool	550	10	11	571	15	8500	9086	
	TOTAL:	6600	135	135	6870	300	75000	82170	

ANNEXURE V

District wise Physical and Financial Targets for the year 2018-19 under Integrated Nutrient Management scheme

S. No	District	Areas to be covered in Ha & 100% Subsidy cost Rs. In Lakhs		One Mandal level demonstration incentive to farmer @ 2500/- & CC Expts 10 per mandal @ Rs.500/- per CC Expt		Grand Total Rs. in Lakhs	
		Phy Tar	Fin Tar	Phy Tar	Fin Tar		
1	Srikakulam	41000	312.67	407	2.78	315.45	
2	Vizianagaram	47500	362.24	374	2.55	364.79	
3	Visakhapatnam	43000	327.92	473	3.23	331.15	
4	East Godavari	48500	369.87	649	4.43	374.29	
5	West Godavari	49000	373.68	583	3.98	377.65	
6	Krishna	49000	373.68	550	3.75	377.43	
7	Guntur	50500	385.12	627	4.28	389.39	
8	Prakasam	59500	453.75	616	4.20	457.95	
9	S.P.S.R.Nellore	62500	476.63	506	3.45	480.08	
10	Chittoor	76500	583.40	726	4.95	588.35	
11	Y.S.R. Kadapa	57500	438.50	561	3.83	442.33	
13	Anantapuramu	102500	781.68	693	4.73	786.40	
12	Kurnool	63000	480.44	594	4.05	484.49	
14	FCO Labs & PP Section towards lab maintenance and testing of Bioproducts						217.30
	Total:	750000	5719.58	7359	50.18	5987.05	

ANNEXURE VI

Budget for the year 2018-19 under Integrated Nutrient Management scheme in Andhra Pradesh

Rs. in Lakhs

Office	General	SCP	STP	Total
	330 Subsidies	330 Subsidies	330 Subsidies	
C&DA PD A/c	4622.43	989.62	375.00	5987.05
Total	4622.43	989.62	375.00	5987.05