Sustainable Soil Fertility Management

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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 fertilizer 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 Labs	1	Macro & Micro nutrient & water analysis
2	District Soil Testing Lab	16	Macro & Micro nutrient & water analysis
3	Mobile labs	9	Macro & Micro nutrients
4	Agril.Market Committee level labs	30	Macro & Micro nutrients
	Total	**56**	

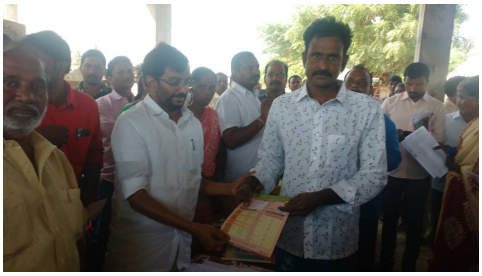
a) SOIL SAMPLE COLLECTION:

- Special drive has been taken up for soil sample collection. Sample collection is being taken up in systematic manner using GPS to record the coordinates on the site of sample collection. GPS are being supplied to mandals @ 3/mandal i.e a total of 1983 instruments.
- It is proposed to collect 7.60 Lakh samples and to distribute 21 lakhs Soil health Cards during 2017-18 Conducting awareness campaign to farmers on importances of Soil sample and procedure for collection of soil samples.

b) SOIL SAMPLES ANALYSIS:

- As per revised instructions of Government of India entire 13.48 lakh soil samples collection for 1st cycle of 3 years plan period was condensed to two years and the same is planned to complete by March 2017. So far 15.57 Lakh Soil Samples are analyzed against target of 13.48 lakh Soil Samples.
- Analysis is planned to be completed by May 2017.
- The annual analyzing capacity of existing labs is being enhanced by additional equipment and latest soil analysis imported equipment named, MP-AES(3 Nos).
- The staff in the soil testing lab and field has been imparted trainings pertaining to GPS usage and Atomic Absorption Spectrophotometer and other latest equipment usage.

c) DISTRIBUTION OF SOIL HEALTH CARDS:



- Immediately after analysis the results will be onlined and viewed at Agrisnet and NIC portal.
- Also through SMS soil analysis results will be sent to farmers mobile in Telugu immediately after analysis.
- Soil health cards will be distributed to farmers before commencement of season.
- Village level interactive meetings will be arranged on Soil health status and recommendations based on soil test results will be communicated to farmers with the main aim to promote balanced and Integrated Nutrient Management (INM).

The District wise soil sample collection and number of Soil Health Cards to be distributed during 2017-18 is enclosed in **Annexure – I.**

It is Pland to distribut all Soil health Cards to the farmers in the State by the end of June-2017.

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

Soil Health management to increase soil nutrients and thus enhance crop productivity is a major technological challenge for ensuring food security and sustaining rural development. Plant nutrition management is also essential to sustain and enhance crop productivity to meet the demand for food and raw materials and to maintain the quality of land and water resources. To ensure soil health, accurate invention of soil resources is a prerequisite. Soil health can be improved through several site and soil-specific management options.

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 use of soil amendments for reclamation of alkaline soils for improving their fertility and crop productivity.
5. To promote use of micro nutrients for improving efficiency of fertilizer use.
6. To upgrade the skill and knowledge of technical personnel and farmers through training 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 fertilizer quality control facility in FCO laboratories as well as Bio Pesticide Laboratories of the State for effective implementation of "Fertilizer Control Order".

Under the SHM component proposals have been submitted to GOI is enclosed in

Annexure - II.

C. Soil Health Card Scheme under NMSA

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. The farmers will be covered once in every three years. This fecility is providing to the farmers in the State as the end of concluding year.(3rd year).

In this regard the as per the guidelines issued by GOI soil samples have to be drawn as follows:

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

As per the guidelines of GOI the sharing pattern of funds for implementation of scheme during 2015-16 was 50:50 by the GOI. From 2016-17 the sharing pattern of funds was revised to 60:40. Based on the revised guidelines the proposals have been submitted for 2017-18 to GOI is enclosed in **Annexure - III.**

D. Integrated Nutrient Management Scheme under Normal State Plan to Promote Soil Test Based Fertilizer Usage.

Analysis of soil samples has indicated that 40-49% of soils in Andhra Pradesh are potentially deficient in Zn, 12% in Fe, 5% in Mn, 3% in copper (Cu), 33% in boron (B), 11% in molybdenum (Mo) and 20-24 % 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 Department of Agriculture with ICRISAT & Other Organizations, large scale deficiencies of multiple nutrients such as micro and secondary nutrients like Zinc, Boron, Sulphur, Iron and in some case copper are recorded below critical limits which are reducing the responses 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 phosphoric fertilizer applications and emphasize the importance of Integrated Nutrient Management based on soil test recommendations.

Benefits of the Programme:

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

Guidelines for Implementation of the Programme:

- Micronutrients like Zinc Sulphate, Borax, Ferrous Sulphate and secondary nutrients like Magnesium Sulphate and Gypsum are supplied to farmers on 50% subsidy based on Soil test results.
- Gypsum is supplied for Reclamation of alkaline soils also.
- Trainings will be conducted to create awareness among farming community regarding benefits of micronutrients.
- 2-3 Farmer facilitators per mandal will be appointed for 4 months by district JDAs to create awareness among farmers on the rectification of micronutrient deficiencies.
- Guidelines for appointing farmer facilitator:
  - Education: Intermediate with science group/Polytechnic in Agriculture
  - Age:20-45 years
  - Should be a resident of that respective mandal
- Zinc Sulphate will be supplied to paddy, maize, cotton, groundnut and other crops @ 50Kg/ha for basal application and Zinc Foliar spray @ 0.5Kg/ha
- Gypsum will 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 or foliar spray @ 1.5kg/ha.
- Magnesium Sulphate will be supplied to Cotton for foliar spray @ 1 Kg/Ha.
- Ferrous Sulphate will be supplied to all crops for foliar spray @ 0.5Kg/Ha.

Quantity of micronutrients proposed to be supplied during 2017-18

S. No	Name of the input	Qty. proposed to be supplied in MTs	Area proposed to be covered in lakh ha
1	Zinc Sulphate	9180	5.5
2	Borax	460	1.6
3	Gypsum	77100	1.8
4	Magnesium Sulphate	150	1
5	Ferrous Sulphate	50	0.5
Total		86940	10.4

- District wise physical and financial targets for the year 2017-18 given in **Annexure - IV & V.**

Subsidy Pattern:

50% subsidy limited to 2 Ha.

Budet Sources:

SDP (State Plan)

Budget Distribution among Districts:

Enclosed in **Annexure VI.**

ANNEXURE - I

Soil Samples Collection Target and Soil Health Cards Target for 3rd phase

S. No.	District	Soil samples collection Target	Soil Health cards Distribution Target
1	Chittoor	27144	141149
2	Visakhapatnam	10413	55068
3	Kadapa	30589	159063
4	Srikakulam	34625	212898
5	Ananthapuramu	65705	166565
6	Krishna	16178	76723
7	Nellore	46985	199991
8	Prakasam	47644	219087
9	Vizianagaram	23658	210000
10	West Godavari	17601	111913
11	Guntur	82861	222436
12	Kurnool	68221	263984
13	East Godavari	38652	100863
	Total	**510276**	**2139740**

ANNEXURE II

Action Plan for the Centrally Sponsored Scheme Soil Health Management Scheme of Andhra Pradesh State for the year 2017-18 as per Guidelines issued by GOI

S.No	Components	Physical (No.)	Financial Amount Proposed Rs. In Lakhs
1	Setting of new Mobile Soil Testing Laboratories (Nellore, Vizianagaram)	2	112.0
2	Laboratories and Mobile Soil Testing Laboratories	20	800.0
3	Training for Farmers	650	65.0
4	Strengthening of the existing State Fertilizer Quality Control Laboratories	3	60.0
5	Strengthening of the Fertiliser Coding Centre, Malakpet, Hyderabad.	1	10.0
	Grand Total		**1047.0**

ANNEXURE - III

Action Plan for the Centrally Sponsored Scheme Soil Health Card of Andhra Pradesh State 2017-18 as per Guidelines issued by GOI

S.No	Component	Unit	Phy	Financial Rs. Lakhs		
				GOI Share (60%)	State Govt Share (40%)	Total (100%)
I	Soil Health Cards					
1	Total No of Soil samples to be collected and analyzed @ 190/- per sample	No	751983	1353.57	902.38	2255.95
II	Training to Technical Staff					
1	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	52	18.72	12.48	31.20
III	Capacity Building					
1	Farmers Training					
	No of 2 days farmers training to be organized with 30 per participants @ Rs.24000/- per training	No	30	4.32	2.88	7.20
2	Training of Staff (Agriculture/ICAR)					
	No of 2 days staff training to be organized with 20 per participants @ Rs.36000/- per training	No	30	6.48	4.32	10.8
3	ICT	0	Lumpsum	7.76	5.17	12.93
4	Work Shop	No	1	0.90	0.60	1.50
V	Mission Management (Separate proposals to be submitted which should not exceed 1% of Total budget)			11.35	7.56	18.91
	Grand Total			1403.10	935.39	2338.49

ANNEXURE IV

Districtwise tentative targets for distribution of Zinc Sulphate 21%, Borax 10.5%, Ferrous Sulphate, Magnesium Sulphate and Gypsum under "Integrated Nutrient Management Scheme" during 2017-18

Qty in Mts

S. No	District	Zinc sulphate				Boron			Gypsum	Fe12% EDTA Chelated	MgSO4 (9.6% Mg & 12% S)	Grand Total (col.6+col.9+col.10+ col.11+col.12)
		Basal 21%	Foliar spray 33%	Foliar spray 12%	Total	Basal 10.5%	Foliar spray 20.5%	Total	Bagged & Bulk			
1	Srikakulam	450	13	13	476	3	3	6	1000	1	1	1484
2	Vizianagaram	450	13	13	476	19	3	22	1350	2	4	1854
3	Visakhapatnam	450	13	8	471	17	3	20	1000	3	1	1495
4	East Godavari	600	15	10	625	23	6	29	1200	5	1	1860
5	West Godavari	700	15	15	730	15	6	21	2400	5	35	3191
6	Krishna	500	15	25	540	24	3	27	1950	1	20	2538
7	Guntur	750	15	15	780	22	3	25	2800	2	20	3627
8	Prakasam	800	9	9	818	39	3	42	3900	3	5	4768
9	Nellore	1850	10	10	1870	19	5	24	8000	1	1	9896
10	Chittoor	300	8	8	316	54	3	57	13000	10	5	13388
11	Kadapa	400	13	13	426	14	3	17	8300	1	35	8779
12	Anantapur	800	13	13	826	132	6	138	25000	4	5	25973
13	Kurnool	800	13	13	826	26	6	32	7200	12	17	8087
TOTAL:		**8850**	**165**	**165**	**9180**	**407**	**53**	**460**	**77100**	**50**	**150**	**86940**

ANNEXURE V

DISTRICTWISE Physical and Financial Targets for the year 2017-18 under Integrated Nutrient Management Scheme in Andhra Pradesh

S.No	Name of the District	Areas to be covered in Ha & 50% Subsidy cost Rs. In Lakhs		Mandal level Trainings & CC Expts @ Rs.10000/- per training		Salaries to Farmer Facilitators @ Rs.8000/- for 4 months		Grand Total Rs. in Lakhs
		Phy Tar	Fin Tar	Phy Tar	Fin Tar	Phy Tar	Fin Tar	Fin Tar
1	Srikakulam	55000	267.42	185	18.50	185	14.80	**300.72**
2	Vizianagaram	55000	267.42	170	17.00	170	13.60	**298.02**
3	Visakhapatnam	58000	282.00	215	21.50	215	17.20	**320.70**
4	E.Godavari	95000	461.92	295	29.50	295	23.60	**515.02**
5	W.Godavari	105000	510.55	265	26.50	265	21.20	**558.25**
6	Krishna	75000	364.65	250	25.00	250	20.00	**409.65**
7	Guntur	75000	364.65	285	28.50	285	22.80	**415.95**
8	Prakasam	89000	432.75	280	28.00	280	22.40	**483.15**
9	Nellore	83000	403.55	230	23.00	230	18.40	**444.95**
10	Chittoor	85000	413.3	330	33.00	330	26.40	**472.70**
11	Kadapa	120000	583.46	250	25.00	250	20.00	**628.46**
12	Kurnool	65000	316.05	270	27.00	270	21.60	**364.65**
13	Anantapur	80000	388.98	315	31.50	315	25.20	**445.68**
14	FCO Labs & PP Section towards lab maintenance and testing of							**433.50**
Total:		**1040000**	**5056.70**	**3340**	**334.00**	**3340**	**267.20**	**6091.40**

ANNEXURE VI

Budget Distribution for the year 2017-18 under Integrated Nutrient Management Scheme in Andhra Pradesh

Rs. in Lakhs

Name of the District	2401-105-11-07	2401-789-11-04	2401-796-11-60	Total
	330 Subsidies	330 Subsidies	330 Subsidies	
C&DA PD A/c	4809.78	989.62	292.00	6091.40
Total	**4809.78**	**989.62**	**292.00**	**6091.40**