

**Government of Telangana**  
**Professor Jayashankar Telangana State**  
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**RKVY SUCCESS STORY**

**RKVY Project Title:** ESTABLISHMENT OF ZONAL REFERRAL SOIL TESTING LABORATORY

**Year of Initiation:** 2014-15.

**Place:** REGIONAL AGRIL. RESEARCH STATION, WARANGAL

1. **Success Story title:** Establishment of Apex and Zonal Soil-Plant-Fertilizer referral laboratories in Telangana for soil health management and fertilizer usage in agriculture.
2. **Most significant achievements**
  1. Preparation of soil fertility maps of RARS Warangal
  2. Preparation of soil fertility maps of ARS Toranala
  3. Water quality analysis of RARS Warangal
  4. Suitability analysis of soil and water quality for establishment of poly houses by the farmers
  5. Practical laboratory for the polytechnic and B.Sc (Ag) students
  6. We could able to analyze the soil and plant samples of other schemes of RARS Warangal and entire zone
3. **Challenges**
  1. Creating awareness on detrimental effects of indiscriminate use of fertilizers by the farmers without knowing the fertility status of soils
  2. Creating awareness to farmers on nutrient interactions in soil by excess use of a Single nutrient
  3. Awareness to farmers on micronutrients functions in crops and their analysis in soil which is not available in zone
  4. Build up the confidence by the farmers that the adoption of fertilizer Recommendation based on soil test (30%excess/less) there will not be any yield reduction
  5. To identify the type and degree of soil related problems like acidity, salinity, alkalinity etc., to suggest appropriate reclamation/amelioration measures.

#### 4. Initiatives

1. Imparted training on soil testing importance and procedures to the departmental officers, polytechnic and agricultural students.
2. Given the recommendation on soil and water quality for establishing the Poly-houses by the farmers
3. Analyzed the soil and water samples on cost basis for the progressive farmers
4. Prepared the soil fertility map of RARS Warangal and ARS toranala
5. Analyzed the water quality of RARS Warangal
6. Analyzed the uptake of nutrients by the crops
7. Initiated the analysis of micronutrients in soil and plant samples
8. Purchased the equipment/instruments for an amount of Rs.13,63,000/-

#### 5. Key results:

##### 1. Study the soil fertility status of RARS Warangal

Block	Soil type (Texture)	pH (Range)	Ec (dS/m) (Range)	OC (%) (Range)	N(kg/ha) (Range)	P <sub>2</sub> O <sub>5</sub> (kg/ha) (Range)	K <sub>2</sub> O (Kg/ha) (Range)
A	Sandy Clay Loam	6.15-8.12	0.07-0.28	0.35-0.64	88-339	28-71	165-498
B	Clay Loam	8.23-8.62	0.20-0.33	0.42-0.62	75-180	31-51	180-452
C	Sandy Clay Loam	8.14-8.89	0.24-0.87	0.49-1.0	100-278	23-68	201-775
D	Clay soil	6.53-8.20	0.09-0.80	0.29-0.74	125-213	36-50	274-576
E	Clay soil	7.78-8.46	0.34-0.86	0.25-1.85	250-338	28-69	504-886

Block & plot No.	Avl. Zn (mg/kg)	Status	Avl. Cu (mg/kg)	Status	Avl. Fe (mg/kg)	Status	Avl. Mn (mg/kg)	Status
A -2 & 3	0.52	D	0.88	S	4.29	S	5.26	S
A-6	0.66	S	1.16	S	15.08	S	13.38	S
A-7	0.46	D	0.54	S	17.00	S	7.18	S
A-8	0.78	S	1.32	S	9.62	S	3.56	S
B-1	0.76	S	1.32	S	12.72	S	2.26	S
B-2	0.74	S	1.62	S	13.34	S	1.80	D
B-3	0.46	D	1.38	S	11.48	S	1.56	D
B-4	0.14	D	1.34	S	6.46	S	2.48	S
B-16	0.34	D	0.82	S	6.46	S	4.48	S
C-1	1.82	S	4.28	S	34.16	S	8.00	S
C-9	2.86	S	3.56	S	49.72	S	13.40	S
C-10	1.96	S	3.74	S	44.26	S	4.06	S
C-11	1.54	S	1.96	S	33.28	S	1.68	D
C-12	2.82	S	2.54	S	45.66	S	4.60	S
C-13	2.40	S	1.90	S	47.66	S	4.50	S
C-14	1.50	S	1.50	S	39.46	S	3.28	S

Available micronutrients status of soil of RARS, Warangal 2015-16 (0-20 Cm depth)

## 2. Analysis of soil and water samples of farmers on cost basis

### SOIL ANALYSIS REPORT

Name of the farmer : Lingareddy  
Vil : Regonda  
Mdl : Regonda  
Dist : Jayashankarbhupalpally

Serial. No.	Soil parameter	(Value)	Status
1	Soil texture	Sand - 37.60% Silt - 11.60% Clay - 50.80%	Clay soil
2	pH	4.63	Moderately acidic
3	Ec	0.13	-
4	Organic Carbon (OC-%)	0.57	Medium
5	Available N (Kg/ha)	272	Low
6	Available P <sub>2</sub> O <sub>5</sub> (Kg/ha)	226	High
7	Available K <sub>2</sub> O (Kg/ha)	411	High

**Note:** 1. If availability of nutrient is low increase the recommended dose of fertilizer up to 30%  
2. if availability of nutrient is medium apply the recommended dose of fertilizer  
3. If availability of nutrient is high reduce the recommended dose of fertilizer up to 30%

#### **General recommendation:**

1. Improve the addition of FYM @ 10t/ha
2. Grow the green manure crops every year

#### **Recommended dose of fertilizers (RDF) for crops:**

S.No	Crop	RDF (Kg/ha)			Remarks
		N	P	K	
1	Paddy	120	60	40	-
2	Maize	200	80	80	-
3	Cotton	150	60	60	-

## Water analysis report (Open well)

Name of the farmer : Linga Reddy

Vil : Regonda

Mdl : Regonda

Dist : Jayashankarbhupalpally

S. No	Parameter	Sample value	Normal Range	interpretation
1	pH	8.11	6.5-7.5	Slightly alkaline
2	Ec	0.95	< 0.25	C <sub>3</sub>
3	SAR	2	0.0-9.0	S <sub>1</sub>
4	RSC	0	< 1.25	Safe

### Interpretation

C <sub>3</sub>	0.76 -2.25	<b>High salinity water.</b> It can be used under controlled conditions. Avoid for salt sensitive crops like citrus, grapes, potato etc. Not suitable for heavy soils in summer. This water cannot be used on soil with poor drainage. Drainage should be improved and plants with good tolerance should be selected.
S <sub>1</sub>	SAR = 10 to 18	<b>Medium sodium water (moderately).</b> This water can be used only on soils with moderate texture and having lot of organic matter with good permeability. It produces harmful effects if applied to the soils of fine textured and low permeability

### 3. Soil fertility status of ARS toranala

#### a) Soil physical analysis

Serial No.	Name of the sample	Sand (%)	Silt (%)	Clay (%)	Texture
1	2(Maize breeding)	70.60	11.60	17.80	Sandy Loam
2	3(Green gram field)	64.60	12.60	22.80	Sandy Clay Loam
3	4(Below the sweet corn field)	52.60	9.60	37.80	Sandy Clay Loam
4	5(Present maize)	67.60	16.60	25.80	Sandy Clay Loam
5	6(Rice plot)	67.60	9.60	22.80	Sandy Clay Loam

## b. Soil physico-chemical and chemical analysis

Sl. No.	Name of the sample	pH	Ec	OC (%)	N (Kg/ha)	P (Kg/ha)	K (kg/ha)
1	2(Maize breeding)	4.51	0.10	0.50	188	34.69	149
2	3(Green gram field)	6.37	0.21	0.60	263	95.94	159
3	4(Below the sweet corn field)	6.97	0.38	0.40	201	25.90	314
4	5(Present maize)	7.27	0.30	0.62	276	33.92	161
5	6(Rice plot)	7.24	0.40	0.82	176	27.00	83

## 6. Impact

1. The nitrogen, phosphorus & potassium uptake ranged from 215 to 317kg/ha, 18.95 to 22.46 and 99 to 120, respectively by the rice in rabi-2016 with the application of different N, P & K levels.
2. The nitrogen, phosphorus & potassium uptake ranged from 125 to 169 kg/ha, 14.21 to 20.47 and 91 to 117, respectively by the rice in kharif-2016 with the application of different N, P & K levels.
3. Nitrogen, phosphorus & potassium uptake ranged from 104 to 182kg/ha, 13.52 to 19.29 and 65.32 to 89.94, respectively by the rice in kharif-2015 season with different methods of transplanting.
4. Nitrogen, phosphorus & potassium uptake ranged from 125.22 to 166.31kg/ha, 10.04 to 27.58 and 105.68 to 141.55, respectively by the rice in kharif-2016 season with different methods of transplanting.
5. The majority of the soils of A-block were sandy clay loam in texture, slightly acidic to slightly alkaline in reaction, non saline in nature, organic carbon and available nitrogen content is low to medium, available phosphorus and potassium content is medium to higher in range. The majority of the soils of B-block were clay loam in texture, alkaline in reaction, non saline to slightly saline in nature, organic carbon content is low to medium, available nitrogen content is low, available phosphorus and potassium content is medium to higher range. The majority of the soils of C-block were sandy clay loam in texture, alkaline in reaction, non saline to slightly saline in nature, organic carbon content is medium to high, available nitrogen content is low, available phosphorus content is medium and potassium content is medium to higher in range. The majority of the soils of D-block were sandy clay loam in texture, neutral to alkaline in reaction, non saline to slightly saline in nature, organic carbon content is low to medium, available nitrogen content is low, available phosphorus content is medium and potassium content is medium to higher in range. The majority of the soils of E-block were sandy clay loam in texture, alkaline in reaction, non saline to slightly saline in nature, organic carbon content is low to high, available nitrogen content is low to medium, available phosphorus content is medium to high and potassium content is higher in range.

## 8. Images of soil testing laboratory



## 9. Additional information

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## 10. Check list

Sl. No	Question to consider	Yes	No
1	Is the story interesting to the target audience of the project/activity report?	√	
2	Does the story explain what new insights the project brings? What is the main lesson learned from this story? Does the story describe a key insight on what works and what doesn't and something that future project could build on	√	
3	Does the story describe the outcomes the project produced and the people who are benefitting? What changes—in skills, knowledge, attitude, practice, or policy—has the project brought, and who is benefitting from these changes?	√	
4	Does the story make a compelling point that people will remember? Does the story show how the project makes a difference to improving livelihoods and lessening poverty?	√	
5	Does the story provide an interesting fact that people will remember? For example, how much yields increased, how many hectares of land could become more productive from this innovation or technology?	√	
6	Does the story explain what kind of impact this innovation or technology could have if scaled up?	√	
7	Does the story show which partners contributed and how?	√	
8	Does the story include quotes from Stakeholders or beneficiaries?	√	
9	Have I provided links to other media (journal articles, website news, newsletter, blogs, annual reports of other Programme/ project ) that also feature this story?	√	
10	Have I provided the contact details of people who can provide more information?	√	