

FOR OFFICIAL USE

***GUIDELINES***  
***for***  
**Reclamation of Problem Soils**  
**(RPS)-A Sub Scheme of RKVY**



**Government of India**  
**Ministry of Agriculture & Farmers Welfare**  
**Department of Agriculture, Cooperation &**  
**Farmers Welfare**  
**(Natural Resource Management Division)**  
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## **Guidelines for Reclamation of Problem Soils- as sub scheme of Rashtriya Krishi Vikas Yojana (RKVY) (as on Sept.2016)**

### **1. Introduction:**

1.1 As per available estimates, cultivable land has marginally declined from 183.5 million hectare (2002-03) to 181.9 million hectare (2012-13), whereas during the same period, area under non-agricultural uses has increased by about 2.0 million hectare and such demands will be increased in the coming years. Under these circumstances, there is least possibility of bringing additional area under cultivation for meeting future demands of foodgrain for increasing population. The only alternative for meeting such demands is to improve level of management of "*soils already under cultivation*" and by improving level of productivity of potential arable lands which are presently uncultivated due to one or other reasons.

1.2 As per available estimates, nearly 50 percent of the irrigated land in the arid and semi-arid regions has some degree of soil salinization problems. The phenomenon of accumulation of excess salt/acid in the root zone, results in a partial or complete loss of soil productivity and such soil is defined as '**Problem (alkali, saline & acid) Soils**' and exist mainly in arid and semi-arid regions. Salt affected soils are also found extensively in sub-humid and humid climates, particularly in the coastal regions where the ingress of sea water through estuaries & rivers causes large-scale salinization. Soil salinity is also a serious problem in areas where groundwater with high salinity is used for irrigation. Most serious salinity problem is being faced in those arid and semi-arid regions of the country, where canal irrigation is major source of irrigation.

1.3 The problems of salt-affected soils are old but magnitude and intensity of such soil is increasing due to large-scale efforts to bring additional areas under irrigation with lack of green manure and suitable cropping pattern as per land capability in recent decades. The problems have been made worse by development of irrigation systems without adequate provision for drainage and are being aggravated by poor water management practices, scientific and isolated reclamation procedures.

### **2. Present Scenario:**

2.1 As per Indian Council of Agricultural Research(ICAR) area under problem soils has increased from 220 lakh hectare (2005) to 243 lakh hectare (2010), comprising of alkali soils-37.0 lakh hectare, saline soils including coastal saline areas account for 27.0 lakh hectare and acid soils 179.0 lakh hectare. As such, about 4 lakh hectare area is annually increasing under such soil. State-wise details are given in **Appendix-I**.

2.2 The alkali soils are largely predominant in the Indo-Gangetic plains encompassing States of Punjab, Haryana, Uttar Pradesh & Bihar and partly in states like, Chhattisgarh, Rajasthan, Andhra Pradesh, Gujarat, Maharashtra, Karnataka, Andhra Pradesh, Madhya Pradesh and Tamil Nadu.

2.3 The saline soils are found mainly in the States of Gujarat, Bihar, Haryana, Rajasthan, Maharashtra, Odisha, Andhra Pradesh, Kerala, Tamil Nadu, Uttar Pradesh and West Bengal. Isolated patches of problem soils are also found in other States.

2.4 The problem of acid soils exists in most of the States **except Gujarat, Punjab, Rajasthan and Uttar Pradesh**. With the advent of canal irrigation, area under problem soils is increasing day by day, due to which large fertile cultivated lands is losing production potential across the country.

### **3. Driving Factors for Formation of Problem(alkali, saline & acid) Soils:**

3.1 The major driving factors for creation of alkalinity, salinity and acidity in the soils are any one or mixed of means listed below:

- a. In arid regions, where evaporation exceeds the precipitation, the soluble salts accumulates near the soil surface/root zone;
- b. Ground water of arid regions usually contains considerable quantities of soluble salts and if it is used for irrigation, damages the soil. The extent of damage not only depends upon salt content of irrigation water but also on nature of salts and type of soils on which water is to be used. Farmers do not get their well/ tube-well water tested and continue to irrigate lands till productivity is lost;
- c. Sometimes, salts may have originated directly from chemical weathering of rocks and sodium salts are more harmful than calcium & magnesium salts.
- d. An excessive application of irrigation water and seepage from canals and tanks raises the ground water level which result in continuous accumulation of salt at surface by capillary action and evaporation. If quality of subsurface water is saline, accumulation rate would be much faster.
- e. Poor drainage keeps salts in surface soil and prevents leaching of salts down below the root zone. Many saline soils in command areas are formed due to inadequate and impaired drainage; and
- f. Soil salinization in coastal area is due to the accumulation of salts from inundated sea water. Irrigation water contains high concentration of soluble salts, particularly sodium salts which may also lead to salinity.

### **4. Scheme for Reclamation of Problem Soils-as sub-scheme of RKVY:**

4.1 Planning Commission constituted a Working Group of Sub-Committee of the National Development Council (NDC) on Agriculture and Related Issues on Dryland/ Rainfed Farming System including Regeneration of Degraded Waste Land, Watershed Development Programme **under the Chairmanship of Hon'ble Chief Minister, Government of Gujarat** to suggest various steps to be taken for effective utilization of natural resources especially in rainfed areas including measures/programmes for land resource development in the XI Five Year Plan and requirement of funds and also the area to be covered under the programmes of various Ministries/Departments as well as the State Governments. The committee in its report has recommended for formulation of a Centrally Sponsored Scheme for Reclamation of Problem Soils during XI Plan with enhanced unit costs and Government of India's assistance.

4.2 The Committee recommended for the adoption of **Projectised Approach** with higher unit costs and higher subsidy (at least 75% central assistance as a grant and 25% as state share or beneficiary share) to ensure comprehensive reclamation on sustainable basis, since, owner of problem soils are mostly small and marginal farmers having poor resources and therefore cannot contribute larger amount. *However, during pilot period, present financing pattern of RKVY will be applicable.* Unit costs recommended by the committee during 2006-07 was Rs.29100 per ha. for alkali/saline soils and Rs 8000 per ha for acid soil which have been enhanced to **Rs.60000 per ha.**

**for alkali/saline soils and Rs. 15000 per ha. for acid soil** due to increase in wage rate, cost of soil amendments, fertilizers, seed of high yielding variety of crops etc.

4.3 As recommended by the Committee Constituted by National Development Council (NDC) and also with a view of reclamation and development of problem (Alkali, Saline and Acid) soils to meet the demands of foodgrain of ever increasing population, a dedicated "**Scheme for Reclamation of Problem Soils**" has been introduced as sub scheme of Rashtriya Krishi Vikas Yojana (RKVY). After having implemented this scheme on pilot basis in selected potential States, which have higher extent of problem soil will be taken up as a standalone Centrally Sponsored Scheme.

## **5. Objectives:**

Main objectives of the programme are:-

- a) To reclaim and develop problem soils (lands affected by alkalinity, salinity & acidity);
- b) To adopt need based site specific on farm development, bio-engineering measures and application of soil amendments in **Projectised Approach**;
- c) To improve soil fertility and productivity by application of soil test based judicious use of fertilizers and application of macro & micro nutrients, etc.;
- d) To enhance crop yields by adoption of salt tolerant crop/tree farming systems to ensure food security of the country; and
- e) To create awareness amongst farmers & stakeholders for continuous cultivation to prevent re-occurrence of problem of alkalinity, salinity and acidity in conjunction with other ongoing missions.

## **6. Strategy:**

The strategy *inter-alia* comprises:-

- a) Adoption of Projectised approach for the reclamation and development of alkali, saline & acid soils in contiguous manner;
- b) Implementation of various need based land improvement interventions like, peripheral/marginal bunds, check bunds, hydraulic sluice gate, surface and subsurface drainage systems, farm ponds/water harvesting structures, on farm development, prevention of water logging by construction of bio-engineering measures for prevention of ingress of sea water;
- c) Application of soil amendments, leaching of salt by allowing water impounding with conserved rain water and ensuring sustainability of reclaimed areas by continuous cultivation of recommended salt tolerant crop varieties;
- d) Capacity building of farmers for continuous cultivation of salt tolerant crops/horticultural crops along with soil test based judicious application of fertilizers and micro nutrients to prevent reoccurrence of such problem soils; and
- e) Adoption of definite withdrawal strategy for maintenance of drainage network & other assets created to ensure production system sustainable.

## **7. Project Identification:**

7.1 Selection of project area will be done by using Remote Sensing and Geographic Information System (GIS) with priority for reclamation & development of severe alkaline, saline and acidic soils on **Projectised Approach** in contiguous manner with minimum cluster of about 4 hectare area.

## **8. Project Components:**

8.1 As such soils are having productive potential and must have been under cultivation in past, therefore, depending upon soil type, slope and soil capability, it is proposed to implement two models ie Crop Based Farming System (CBFS) and Agroforestry Based Farming System (ABFS) for reclamation of problem (alkali / saline) soils. The details of the interventions permissible under different models are given in **Appendix-II**. The main components/activities for reclamation could be as under:-

**8.1.1 Alkali Soils:** In these soils, the Exchangeable Sodium Percentage (ESP) is greater than 15, pH is more than 8.2 and Electric Conductivity (EC) is below 4 ds/m. Recommended interventions for reclamation of alkali soils are:

- a) Field bunding, land shaping, construction of irrigation channels & field drains/link drains etc.;
- b) Application of soil amendments (Gypsum/Pyrite) at the average rate of 5 tonnes per ha. and it's mixing with soil when temperature is around 40 degree centigrade;
- c) Green manuring & its mulching in the soil for increasing organic carbon in the soil and high degree use of Farm Yard Manure (FYM);
- d) Application of soil test based chemical fertilizers and micro-nutrients to ensure judicious and balance use of fertilizers;
- e) Growing of suitable crops/horticultural/agroforestry species including food, fuel & fodder plantations depending upon soil and slope conditions for one year;
- f) Casualty replacement and post planting care in case of horticulture and agroforestry plantation for about three years; and
- g) Organization of skill development and awareness programmes for adoption of recommended package of practices on continuous basis to prevent re-occurrence of such problem soils.

**8.1.2 Saline Soils:** Saline soils have excessive concentration of natural soluble salts, mainly chlorides, sulphates and carbonates of calcium, magnesium and sodium. In such soil Electrical Conductivity (EC) of saturated soil extract is more than 4 ds/m, Exchangeable Sodium Percentage (ESP) is less than 15 and pH is also less than 8.2. Such soils are called "saline soils" or "white alkali" or "solonchack" soils and recommended interventions for such soil are listed below:

- a) Field bunding, land shaping, construction of irrigation channel, construction of peripheral bunds, sluice gate, farm ponds/water harvesting structure, etc.;
- b) Construction of surface/sub-surface drainage as per need of the area for lowering the ground water level & also for flashing salt accumulated upper soil layer crop root zone;
- c) Green manuring & its mulching into soil for increasing organic carbon in the soil with thrust on use of F.Y.M.;
- d) Application of soil test based chemical fertilizers and micro-nutrients to ensure judicious and balance use of such fertilizers;
- e) Growing of suitable crops/horticultural/agroforestry species including food, fuel & fodder plantations as per land capabilities depending upon soil and slope conditions for complete one year;
- f) Casualty replacement and post planting care, horticulture and agroforestry plantation for about three years; and
- g) Organization skill development and awareness programme for adoption of recommended package of practices on continuous basis to prevent re-occurrence of problem soils.

**8.1.3 Special Components for Saline Soils:** In areas affected by salinity, water logging and continuous use of imbalance chemical fertilizer and ingressment of sea water mainly results in accumulation of salt in the root zone, therefore, additional interventions could be as under:-

- a) **Subsurface drainage:** If the natural subsurface drainage is insufficient to carry the excess water, dissolved salts in the soil are accumulated near root zone due to rise in groundwater leading to poor root aeration and thereby affects adversely even germination crops. As such, it is necessary to install an artificial drainage system for the control of the groundwater table at a specified safe depth and also for flushing out the dissolved salt of the soil.
- b) **Bio-drainage:** In canal irrigated areas, due to seepage of water from the canal or in low lying areas with frequent flooding, water logging occurs which mainly led to increase in salinity/alkalinity. Mechanical measures to prevent waterlogging through surface and subsurface drainage methods have resulted in lowering water level and reclaiming salinity problem of the areas. Low cost, eco-friendly technology of raising bio-drainage plantations in waterlogged areas has also proved to be very successful in many cases and, therefore, such system need to be adopted in the areas having high salinity especially in the coastal saline areas. The most common tree species recommended for bio-drainage in Indian subcontinent and other parts of the world is *Eucalyptus* due to its high Evapo-Transpiration (ET) demand and adaptability to the varying soil, wet and salinity conditions. Tolerance to salinity and alkalinity with & without waterlogging provides added advantage for its adoption in establishing bio-drainage belt/ sole plantation crop.
- c) **Filter materials:** Local filter material is placed around subsurface drains primarily to prevent inflow of soil into drains which may cause failure or to increase effective diameter or area of openings in the drains which increases water inflow rate. Thin sheets such as fiber glass or spun nylon & sand and gravel envelopes or other porous granular are generally used materials.
- d) **Maintenance of drainage systems:** A subsurface drainage system normally requires little maintenance, these are properly designed. Outlet ditch should be kept free of the sediment and the tile outlet should be protected against erosion and undermining. Roots of nearby trees can also block subsurface drains for which shrubs and trees growing adjacent to a tile line should be removed. Weed growth must be controlled and the caving in of the sides requires continuous attention in order that entire drainage system continues to work efficiently.

**8.1.4 Acid Soils:** Acid soils are highly leached, generally poor in fertility and water holding capacity with pH value of less than 5.5. Such soils are having production potential but due to severe deficiencies of phosphorus, calcium, magnesium, molybdenum and toxicities of aluminum & iron, soil productivity decreases over the years. Recommended package of practices includes following measures:-

- a) Field bunding, land shaping, construction of field channels/water harvesting structures, etc.;
- b) Application of soil amendment (lime), at the rate of 2 to 4 quintals per ha. in furrows depending on extent of acidity along with growing crops suiting to such soils to enhance productivity;
- c) Green manuring & its mulching into soil for increasing organic carbon in the soil along with use of F.Y.M;

- d) Growing of suitable crops (Pigeon pea, Soya bean, Groundnut, Lentil, Gram, Pea, Cotton, Maize, Sorghum, Wheat, Linseed and Mustard etc.) /horticultural/agro-forestry species including fuel & fodder plantation depending upon soil capabilities and slope conditions; and
- e) Skill development for adoption of recommended package of practices on continuous basis to prevent recurrence of acidity in the soil.

## **9. Financing Pattern:**

9.1 Most of the area affected by problem (alkali, saline & acid) soils is owned by small and marginal resource poor farmers and *they may not be able to contribute large amount for reclamation of such soils, therefore, it has been decided that the cost of reclamation/development will be shared by the Central Government and concerned State Governments.*

9.2 Further, funding pattern of all Centrally Sponsored Schemes including RKVY have been changed to 60:40 between Centre and State Governments for all the States except eight north-eastern (*Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and Tripura*) & three Himalayan States (*Jammu & Kashmir, Himachal Pradesh and Uttarakhand*) for which fund sharing is 90:10 between Centre and State Governments respectively as per Ministry of Finance, Department of Expenditure DO No. 32/PSO/FS/2015, dated 28<sup>th</sup> October, 2015.

## **10. Cost Norms:**

Upper limit of unit cost will be Rs.60000 per ha. for alkaline/saline soils and Rs.15000 per ha. in case of acid soil for reclamation on Projectised Approach basis *or actual whichever is less.*

## **11. Project Submission and Approval:**

11.1 As per recommendation of Working Group of Sub-Committee of the National Development Council (NDC) on Agriculture and Related Issues on Dryland/ Rainfed Farming System including Regeneration of Degraded Waste Land, Watershed Development Programme **under the Chairmanship of Hon'ble Chief Minister, Government of Gujarat, Projectised Approach** is to be adopted for comprehensive development with minimum 4 hectare of cluster affected by high salinity/alkalinity and acidity in contiguous manner.

11.2 District Action Plan (DAP) is to be formulated for need-based, site specific interventions, keeping the cost of the components of scheme in Performa given in **Appendix III**. Nodal Department will place State Action Plan (SAP) before State Level Project Screening Committee (SLPSC), which shall after due consideration and scrutiny will be approved by State Level Sanctioning Committee (SLSC) & submitted to DAC&FW.

11.3 At national level, DAP/SAP will be technically examined by Natural Resource Management division and approved programme will be conveyed to RKVY division for release of fund to State Governments.

## **12. Project Implementation Plan (PIP):**

12.1 State Agriculture Department will declare the Nodal Implementing Agency; however, scheme will be implemented by multi- disciplinary team of state officers with active involvement of Panchayatiraj Institutions in planning, implementation and monitoring of the scheme.

12.2 State should give priority for small & marginal categories farmers for extending the support and one farming family should get benefit of one farming system, out of two as envisage in the scheme.

### **13. Release of Fund:**

13.1 DAC&FW, Ministry of Agriculture & Farmers Welfare will allocate state-wise funds as a sub scheme of RKVY the State Governments depending upon *the proposals received from the states*, extent of problem soils in the respective State and overall availability of funds.

13.2 50% of the allocated amount will be release as first installment to the states, so that on farm development work, application of soil amendments and other season based activities are completed before on set of monsoon. Second & final installments would be considered as per norms of RKVY and submission progress and Utilization Certificate & as per Performa given in **Appendix-III & IV** respectively.

### **14. Convergence:**

Scheme will be implemented across the country and location specific interventions suitable for reclamation of problem soils will be adopted in Projectised Approach. While selecting interventions for these purposes, the work already implemented in the area under various State/ Central Schemes like MNERGA, IWMP, NMSA etc. will be taken into account & left over components will be proposed to ensure complete convergence with programmes of Government of India.

### **15. Administrative Expenses & Contingencies:**

15.1 1% of outlay will be retain at Central Level by DAC&FW for administrative expenses at national level for incurring administrative expenditure that includes payment of consultants, recurring expenditure of various kinds, staff cost, monitoring and evaluation, capacity building and contingency etc.

15.2 State Nodal Agency is authorized to use up to 4 % of outlay, for hiring of consultants for formulation DAP/SAP, capacity building & training, maintenance of assets created after withdrawal of scheme and other contingencies expenditure.

### **16. Monitoring Mechanism:**

16.1 At national level, web-based monitoring, desk reviews, field visits and evaluation by external agencies will be adopted for effective monitoring.

16.2 State Government will mainly responsible to ensure effective implementation through multi- disciplinary team of officers with active involvement of Panchayati Raj Institutions and will submit Quarterly Progress Report (QPR) by 15<sup>th</sup> of first month of next quarter to Government of India. Similarly, Annual Progress Report (APR) should be forwarded within a month, after closure of financial year in Performa - **Appendix-III**.

16.3 At village level, details of approved programme, all interventions name of beneficiaries, expenditure incurred etc. may be displayed at the Panchayat Bhavan/ prominent public place in the village and it may be placed before the concerned Gram Sabha annually from the point of social audit.

### **17. Expected Outcome:**

17.1 The implementation of the scheme of reclamation of problem (alkali, saline and acidity) soils may result following benefits:

- a) The reclamation of areas affected by problem soils will result in increase in soil fertility & productivity as compared to present level;
- b) Such reclaimed areas will be put mostly under double crops (Rabi and Kharif), leading to increase in cropping intensity by 200%;
- c) Increase in farmers income and employment opportunities may result in reducing rural to urban migration;
- d) Larger area under green cover will lead to higher carbon sequestration & thereby will help climate change adaptation & mitigation efforts; and
- e) Increase in productivity will enhance overall foodgrain production and thereby sustaining food security of the country.

**Appendix-I****State-wise area affected by Problem (alkali, saline and acid) Soils in India**

(Area in Lakh hectare)

Sl. No.	Name of States	Area affected by Problem (alkali, saline & acid) Soils			
		Alkali	Saline	Acid	Total
1.	Andhra Pradesh*	1.94	0.60	0.01	2.55
2.	Arunachal Pradesh	0.00	0.00	17.69	17.69
3.	Assam	0.00	0.00	19.95	19.95
4.	Bihar	1.06	0.40	0.41	1.87
5.	Chhattisgarh	0.13	0.00	23.42	23.55
6.	Goa	0.00	0.00	1.03	1.03
7.	Gujarat	5.45	15.59	0.00	21.04
8.	Haryana	1.84	0.46	0.02	2.32
9.	Himachal Pradesh	0.00	0.00	0.76	0.76
10.	Jammu & Kashmir	0.00	0.00	0.78	0.78
11.	Jharkhand	0.00	0.00	7.35	7.35
12.	Karnataka	1.45	0.02	0.93	2.40
13.	Kerala	0.00	0.21	24.26	24.47
14.	Madhya Pradesh	1.24	0.00	4.82	6.06
15.	Maharashtra	4.21	1.71	2.69	8.61
16.	Manipur	0.00	0.00	15.97	15.97
17.	Meghalaya	0.00	0.00	10.23	10.23
18.	Mizoram	0.00	0.00	11.63	11.63
19.	Nagaland	0.00	0.00	15.16	15.16
20.	Odisha	0.00	1.31	2.03	3.34
21.	Punjab	1.52	0.00	0.00	1.52
22.	Rajasthan	1.52	0.82	0.00	2.34
23.	Sikkim	0.00	0.00	0.58	0.58
24.	Tamil Nadu	3.52	0.11	4.27	7.90
25.	Tripura	0.00	0.00	7.09	7.09
26.	Uttarakhand	0.00	0.00	4.00	4.00
27.	Uttar Pradesh	13.20	0.22	0.00	13.42
28.	West Bengal	0.00	4.08	4.18	8.26
29.	Others	0.00	1.76	0.00	1.76
<b>Total (Lakh ha.)</b>		<b>37.08</b>	<b>27.29</b>	<b>179.26</b>	<b>243.63</b>
<b>Total (Million ha.)</b>		<b>3.70</b>	<b>2.73</b>	<b>17.93</b>	<b>24.36</b>

\*Includes problem area of Telengana State also.

Source: Degraded and Wastelands of India-Status and Spatial Distribution published by ICAR (2010)

## Appendix-II

### Permissible components and Performa for formulation of District Action Plan(DAP)/Sate Action Plan (SAP)

(Phy. in ha & Fin. in Rs. lakh)

S. N.	Name of the components	Actual Unit cost/ha	DAP <sub>1</sub>		DAP <sub>2</sub>		SAP	
			Phy.	Fin.	Phy.	Fin.	Phy.	Fin.
<b>Alkali/Saline Soils: MODEL- I Crop Based Farming System (CBFS)</b>								
	a) On Farm Development, Bunding, irrigation channel, land shaping							
	b) Construction of peripheral bund, sluice gate, farm pond, surface/sub surface drainage Bio/Pump drainage, etc							
	c) Link Drain with required structures.							
	d) Sub-surface drainage/Bio-drainage							
	e) Creation of water bodies (Boring/dug well/farm pond) for each 4 ha.							
	f) Diesel/ Electric Pump-set of 8.5 H.P. along with other accessories for 4 ha.							
	g) Soil amendment & its mixing at the rate of average maximum upto 5 tonnes/ha.							
	h) Green Manuaring (60Kg./ha) & mulching							
Kharif	i) High Yield Variety of rice Seed @25 Kg/ha							
	j) Fertilizer (Urea , DAP & Potash)							
	k) Zinc sulphates @ 20 Kg/ha							
Rabi	l) High Yield Variety wheat Seed @100 Kg/ha							
	m) Fertilizer (Urea , DAP & Potash)							
<b>Total estimated cost for Model-I</b>		<b>60,000</b>						
<b>MODEL-II Agroforestry Based Farming System (ABFS) in private undulating land unfit for crop production</b>								
	a) Fencing {Contour Trench Fencing-(1.5 mtr. top width, 1 mtr. depth & 0.5 mtr. Bottom width)}							
	b) Construction of peripheral bund, sluice gate & farm pond							
	c) Link Drain with required structure							
	d) Sub-surface drainage/Bio-drainage							
	e) Creation of water bodies (Boring/dug well/farm pond) for each 4 ha.							
	f) Diesel/ Electric Pump set of 8.5 H.P. with other accessories for 4 ha.							
	g) Pit digging (1x1x1mtr.), advance soil work (1/3 Soil change, 1/3 FYM, 1/3 soil amendments), plantation of fruits trees @ 160 plants per ha.							
	h) Agroforestry/Agri. & Hort. Development @ of 200 plants/ha							
	i) Casualty replacement and Post Planting Care (for three years).							
<b>Total estimated cost for Model-II</b>		<b>60,000</b>						
<b>Acid soils</b>								
	(a) On Farm Development, Bunding, irrigation channel, land shaping & field drains.							
	(b) Soil amendment lime & its mixing at the rate of average maximum 4 quintals/ha.							
	(c) Green Manuaring (60Kg./ha) & mulching							
	(d) Supply of inputs seeds, insecticide, fertilizers							
<b>Total estimated cost for Acid Soils</b>		<b>15,000</b>						

Note: Actual unit cost of each component may be estimated as per existing wage/material rate prevailing in the state, however overall unit cost for the project should remain unchanged. Need-based measures out of listed items above can be proposed taking into account work undertaken/being taken in proposed cluster from any other schemes. Cluster should be depicted on Dist. Map along with detail planning.

Signature  
Designation

**Appendix-III**

**Performa for Six monthly/Annual Progress Reporting of Reclamation of Problem Soils**

(Phy. in ha & Fin. in Rs. Lakh)

S.N.	Name of the components	Target		Achievement	
		Phy.	Fin.	Phy.	Fin.
<b>Alkali/Saline Soils: MODEL- I Crop Based Farming System (CBFS)</b>					
	a) On Farm Development, Bunding, irrigation channel, land shaping				
	(b) Construction of peripheral bund, sluice gate, farm pond, surface/sub surface drainage Bio/Pump drainage, etc				
	c) Link Drain with required structures.				
	d) Sub-surface drainage/Bio-drainage				
	e) Creation of water bodies (Boring/dug well/farm pond) for each 4 ha.				
	f) Diesel/ Electric Pump-set of 8.5 H.P. along with other accessories for 5 ha.				
	g) Soil amendment & its mixing at the rate of average maximum 5 <u>tonnes/ha.</u>				
	h) Green Manuaring (60Kg./ha) & mulching				
Kharif	i) High Yield Variety of rice Seed @25 Kg/ha				
	j) Fertilizer (Urea , DAP & Potash)				
	k) Zinc sulphates @ 20 Kg./ha				
Rabi	l) High Yield Variety wheat Seed @100 Kg/ha				
	m) Fertilizer (Urea , DAP & Potash)				
<b>Total actual cost for Model-I</b>					
<b>MODEL-II Agroforestry Based Farming System (ABFS) in private undulating land unfit for crop production</b>					
	a) Fencing {Contour Trench Fencing-(1.5 mtr. top width, 1 mtr depth & 0.5 mtr. Bottom width)}				
	b) Construction of peripheral bund, sluice gate & farm pond				
	c) Link Drain with required structure				
	d) Sub-surface drainage/Bio-drainage				
	e) Creation of water bodies (Boring/dug well/farm pond) for each 4 ha.				
	f) Diesel/ Electric Pump set of 8.5 H.P. with other accessories for 4 ha.				
	g) Pit digging (1x1x1mtr.), advance soil work (1/3 Soil change, 1/3 FYM, 1/3 soil amendments), plantation of fruits trees @ 160 plants per ha.				
	h) Agroforestry/ Agri.& Hort. Development.@ 200 plants/ha.				
	i) Casualty replacement and Post Planting Care (for three years).				
<b>Total actual cost for Model-II</b>					
<b>Acid soils</b>					
	(a) On Farm Development, Bunding, irrigation channel, land shaping & field drains.				
	(b) Soil amendment lime & its mixing at the rate of average maximum 4 <u>quintals/ha.</u>				
	(c) Green Manuaring (60Kg./ha) & mulching				
	(d) Supply of inputs seeds, insecticide, fertilizers				
<b>Total actual cost for Acid Soils</b>					

Note: Components-wise achievements, need to be reported excluding measures/work undertaken/being taken under other schemes in proposed cluster.

Signature  
Designation

**Form of Utilization Certificate**

**FORM GFR 19-A**

[See Government of India's Decision (1) below Rule 150]

<b>S.No.</b>	Letter no and date	<b>Amount</b>
Total		

Certified that out of Rs. \_\_\_\_\_ of grants-in-aid sanctioned during the year \_\_\_\_\_ in favour of \_\_\_\_\_ under this Ministry/Department Letter No. given in the margin and Rs. \_\_\_\_\_ on account of unspent balance of the previous year, a sum of Rs. \_\_\_\_\_ has been utilized for the purpose of \_\_\_\_\_ for which it was sanctioned and that the balance of Rs. \_\_\_\_\_ remaining unutilized at the end of the year has been surrendered to Government (vide no. \_\_\_\_\_ dated \_\_\_\_\_)/ will be adjusted towards the grants-in-aid payable during the next year \_\_\_\_\_.

2 The Utilization Certificate should also disclose whether the specified, quantified and qualitative targets that should have been reached against the amount utilized, where in fact reached, and it not; the reasons thereof. They should contain an output-based performance assessment instead of input-based performance assessment.

1. Certified that I have satisfied myself that the conditions on which the grants-in-aid was sanctioned have been duly fulfilled/ are being fulfilled and that I have exercised the following checks to see that the money was actually utilized for the purpose for which it was sanctioned.

Kinds of checks exercised

- 1.
- 2.
- 3.

Signature.....  
Designation.....  
Date.....