

MAJOR RESEARCH PROJECT
on
**ECO-FRIENDLY UTILIZATION OF ELECTROPLATING
INDUSTRIAL EFFLUENT RESIDUE FOR
GROWING CERTAIN CROP PLANTS**

FINAL REPORT

Funded by
UGC, New Delhi

Tenure of the Project : Three years (01.07.2011 to 31.12.2014)
Total Grant Allocated : Rs. 8,69,933/-



Submitted by
Dr.M.R.RAJAN
Professor & Principal Investigator
Department of Biology
The Gandhigram Rural Institute - Deemed University
(Re-Accredited with 'A' Grade by NAAC)
Gandhigram -624 302
Dindigul District, Tamil Nadu, India

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Gandhigram -624 302

Dindigul District, Tamil Nadu, India



ज्ञान-विज्ञान विमुक्तये

UNIVERSITY GRANTS COMMISSION
BAHADUR SHAH ZAFAR MARG
NEW DELHI - 110 002.

Annexure – IX

FINAL REPORT OF THE WORK DONE ON THE MAJOR RESEARCH PROJECT

1. Title of the project : Eco-friendly Utilization of Electroplating Industrial Effluent Residue for Growing Certain Crop Plants
2. Name and Address of the Principal Investigator : Dr.M.R.Rajan
Professor
Dept of Biology
The Gandhigram Rural Institute-Deemed University, Gandhigram, 624 302,
Dindigul District, Tamil Nadu, India
3. Name and Address of the Institution : The Gandhigram Rural Institute-Deemed University, Gandhigram, 624 302,
Dindigul District, Tamil Nadu, India
4. UGC approval Letter No. and Date : F.No.40-148/2011(SR) dt.04.07.2011
5. Date of Implementation : 01.07.2011
6. Tenure of the Project : Three years (01.07.2011 to 31.12.2014)
7. Total Grant Allocated : Rs. 8,69,933/-
8. Total Grant received : Rs. 7,94,920/-

9. Final Expenditure

S.No.	Name of the Item	Amount Approved (Rs.)	Expenditure Incurred (Rs.)
i.	Equipment	50,000	49,2700
ii.	Books & Journals	20,000	20,000
iii.	Project Fellow	4,90,133	4,90,133
iv.	Chemical/Glassware/ Consumable	1,30,000	1,17,497
v.	Hiring Services	40,000	25,000
vi.	Contingency	40,000	23,425
vii.	Travel/Field Work	50,000	20,004
viii.	Overhead charges	49,800	49,800
	TOTAL	8,69,933	7,95,129

10. Title of the project : Eco-friendly Utilization of Electroplating Industrial Effluent Residue for Growing Certain Crop Plants

11. Objectives of the project

- To evaluate the physico-chemical characteristics of Electroplating industry effluent.
- Water Quality Index (WQI) of industrial effluent.
- To select Three vegetables and Three pulses for pot culture studies and field trial in various quantities of electroplating industrial effluent residue.
- To evaluate the role of heavy metals Zinc and Copper from the effluent residue on growth, biochemical characteristics and yield performance of vegetable and pulses.
- Field level studies and evaluation.

12. Whether objectives were achieved (give details) : Yes

1. The physico-chemical characteristics of electroplating industry effluent were assessed. The pH of the electroplating industry effluent was 3. The electrical conductivity of the electroplating industry effluent was high (5841 mS/cm), while the total dissolved solids in the electroplating industry effluent were very high (9,700 mg l⁻¹). The content of calcium, magnesium, sodium, potassium, chloride and zinc in the electroplating industry effluent were higher. The Chemical Oxygen Demand (COD) of the electroplating industry effluent was high (240 mg l⁻¹). The sulphate content was low in the electroplating industry effluent.
2. The Water Quality Index (WQI) of the electroplating industry effluent was calculated as a measure of water quality. The results indicate that out of the 10 parameters studied all the parameters were above the permissible limit of BIS standards. The WQI was 0 which showed that the pollution level of the electroplating industry effluent was severe in the rating scale. Thus, the effluent was not suitable for irrigation.
3. Vegetable crops such as **Lady's finger** *Abelmoschus esculentus* Moench., **Cluster bean** *Cyamopsis tetragonoloba* (L.) Taub., **Brinjal** *Solanum melongena* L. and Pulses such as **Black gram** *Phaseolus mungo*, **Green gram** *Phaseolous trilobatus* and **Cow pea** *Vigna unguiculateata* were selected and treated with various quantities (250, 500, 750, 1000 and 1250 mg) of electroplating industry effluent residue for pot culture studies and field trial.
4. Zinc electroplating industry effluent residue widely retarded the growth, reduced the photosynthetic pigments such as chlorophyll a, b, total chlorophyll and carotenoides and yield of the selected crop plants. This can be attributed that heavy metal become phytotoxic to the crop plants beyond the concentration of residue 750 mg in pot culture studies and 1000 mg in field trial.

5 Field trial with the selected crop plants confirmed that the electroplating industry effluent residue treatment at the concentration of 500 mg and 750 mg can enhance the growth and yield of plants. However above 1000mg of residue can create phytotoxicity thereby retarding the growth and reducing yield of plants.

13. Achievements from the project

Utilization of industrial effluents for irrigation is in practice in many countries due to change in climatic pattern which led to water resource deficit. But if the physico-chemical characteristics of such effluent goes beyond the permissible limit, it alters the optimal chemistry of soil for the survival of micro fauna and flora and the accumulated heavy metals in the plant tissue passes in food chain that leads to biomagnification. Therefore ecofriendly utilization of electroplating industry effluent residue at various treatment to the crop plants was studied and found that some physico-chemical characteristics including the heavy metal zinc are beyond the permissible limit therefore it has to be properly treated before disposal. The electroplating industry effluent residue at concentration 1000 mg is a good resource of micro and macro nutrients for the enhanced growth and yield of crop plants.

14. Summary of the findings

In Tamil Nadu, there are so many metal based industries located in various districts like Vellore, Erode, Dindigul, Madurai and Coimbatore in an unorganized manner. Among them, Coimbatore is the second largest industrial centre in Tamil Nadu with 200 electroplating industries and around 130 electroplating industries in Madurai. Electroplating industry is an auxiliary industry and has its own contribution to water pollution. Electroplating and metal finishing industries produce liquid wastes containing metallic ions such as zinc, nickel, chromium, lead, silver, cadmium, mercury as well as salts of cyanides, hydrogen sulphide, ammonia and chloroamines.

- The electroplating industry effluent for the present study was collected from Sundararajapuram, Madurai, Tamil Nadu, India and analyzed for physico-chemical characteristics, viz. pH, Electrical Conductivity, Total Solids, Total Dissolved Solids, Total Suspended Solids, Total hardness, calcium, magnesium, sodium, potassium, chloride, sulphate, dissolved oxygen, Biological Oxygen Demand, Chemical Oxygen Demand and zinc content, for ten times. The Water Quality Index (WQI) was also calculated. Unpolluted water from Gandhigram Rural Institute – Deemed University campus served as the control.
- Electroplating industry effluent was evaporated in glass tray (3litre capacity) in order to collect the residues. After evaporation the residues were scratched and collected for the pot culture studies. After collection of residue, zinc content in the residue was estimated.
- Vegetable crops such as **Lady's finger** *Abelmoschus esculentus* Moench., **Cluster bean** *Cyamopsis tetragonoloba* (L.) Taub., **Brinjal** *Solanum melongena* L. and Pulses such as **Black gram** *Phaseolus mungo*, **Green gram** *Phaseolous trilobatus* and **Cow pea** *Vigna unguiculata* were selected for pot culture studies and field trial based on their easy availability, relative importance in daily diet of a common man, surviving capacity, growth capabilities and economic value.
- The pretreated quality seeds were procured from Horticultural College and Research Institute, Tamil Nadu Agricultural University, Periyakulam, Theni district, Tamil Nadu, India. Healthy, uniform and dried seeds were used in the present study.
- Physico-chemical characteristics of red soil such as pH, Electrical Conductivity, nitrogen, phosphorus, potassium, organic carbon, zinc, iron, manganese and copper were analyzed.

- The electroplating industrial effluent residue was standardized for the present study by a pilot study with various weight ranges from 250mg to 2000mg. From the pilot study it was found that the electroplating industry effluent residue beyond 1250mg was not suitable for germination hence weight range up to 1250mg was used in the present study
- The seeds were sown in various pots containing Cow dung manure, red soil and sand in 1:1:1 ratio and various quantities (250, 500, 750, 1000 and 1250mg) of electroplating industry effluent residue. Untreated pots with seeds were kept as control.
- Both the control and experimental seeds were allowed to grow in plastic pots (12×20cm). All the pots were kept in green house. The experimental plants were supplied with 250mg to 1250mg of respective quantities of electroplating industry effluent residue. In each treatment 3 replicates were maintained and regularly watered with ground water.
- The seedlings were allowed to grow in the respective pots and at field. The growth and biochemical characteristics of vegetable crops were analyzed on 20th, 40th and 60th day for Lady's finger and Cluster bean, on 30th, 60th and 90th day for Brinjal. For pulses, 20th, 40th and 60th day for Green gram *Phaseolus trilobatus*, Black gram *Phaseolus mungo* and Cow pea *Vigna unguiculata*.
- Effect of various quantities (250, 500, 750, 1000 and 1250mg) of electroplating industry effluent residue on yield performance such as number of fruits, length of fruit/pod and weight of fruit/pod for pot culture and field trial were measured.
- The growth characteristics, i.e. the shoot length, shoot length, total fresh weight, total dry weight, leaf area index and vigour index showed a considerable reduction with increasing quantity of electroplating industry effluent residue on 20th, 40th and 60th day for lady's finger and cluster bean, on 30th, 60th and 90th day for brinjal for pot culture and field trial.

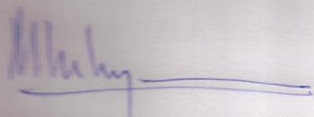
- The effect of electroplating industry effluent residue revealed significant reduction of pigment chlorophyll a, b, total chlorophyll and carotenoides content when compared to those of the control. However, the anthocyanin level in the leaves of all the selected three vegetable crops and pulses for pot culture and field trial was increased with increasing quantity of electroplating industry effluent residue.
- The soluble protein was found to decrease with increasing quantity of electroplating industry effluent residue for pot culture and field trial. The reduction observed in the leaf protein level directly related to the photosynthetic product, namely sugar. The total soluble sugar content was found to be reduced in all the three vegetable crops and pulses with increasing quantity of electroplating industry effluent residue.
- The reduction of protein content also correlated to increase in the accumulation of free amino acids. Anthocyanin and L-proline levels increased in 1250mg of electroplating industry effluent residue treated plants for pot culture and field trial.
- The present study strongly suggests that there is a possibility of improving the electroplating industry effluent pollution by evaporation of electroplating industry effluent, collecting the residue and applying the electroplating industry effluent residue at suitable quantity (750mg for pot culture and 1000 for field trial) for cultivation of selected vegetable crops and pulses for high yield and application of electroplating industry effluent residue beyond the above mentioned quantity found to be toxic to the plants for pot culture and field trial.

15. Contribution to the society :

- Addresses the impact of industrial Electroplating industry effluent.
- Suggests an ecofriendly method of utilization of electroplating industry effluent residue at suitable quantity for the cultivation of vegetable crops and pulses for high yield.
- Suggests an inexpensive way of clearing the soil pollution caused by electroplating industry effluent.
- Electroplating industry effluent residue is alternative to chemical fertilizers.

16. Whether any Ph.D enrolled/ produced out of project- Yes; 1 No.

17. No. of publications out of the project – 8 (Annexure - i)



PRINCIPAL INVESTIGATOR

Dr. M.R. RAJAN, M.Sc., M.Phil., M.Ed., Ph.D.,
Principal Investigator,
UGC - NEP - EUEIERGCP,
Department of Biology,
Gandhigram Rural Institute - Deemed University,
Gandhigram - 624 302, Tamil Nadu, India.



REGISTRAR
REGISTRAR

Gandhigram Rural Institute
(Deemed University)
Gandhigram - 624 302.
Dindigul Dist. Tamil Nadu

Annexure – i Publications

1. M.R. Rajan, S. David Noel and V.Antony Arockia Selvan (2013) Impact of Zinc electroplating industry effluent residue on growth and biochemical characteristics of Brinjal *Solanum melongena*. Indian Journal of Applied Research, 3(3):78-79. **Impact factor: 2.1652**
2. M.R. Rajan, S. David Noel and S.Gurulakshmi (2013) Zinc electroplating industry effluent residue on growth, biochemical characteristics and yield of Lady's finger *Abelmoscus esculentus*. Indian Journal of Applied Research, 3(5): 63-64. **Impact factor: 2.1652**
3. M.R. Rajan, S. David Noel and I.Vinnarasi (2013) Impact of Zinc electroplating industry effluent residue on growth, biochemical characteristics and yield of Green Gram *Pisum sativum trilobatum*. Environment and Ecology, 31(2): 454-457.
4. M.R. Rajan, S. David Noel and V.Kalaiselvi (2013) Impact of Electroplating industry effluent residue on growth, biochemical characteristics and yield of Black gram *Phaseolus mungo*. Indian Journal of Applied Research, 3(7): 76-78. **Impact factor: 2.1652**
5. M.R. Rajan, S. David Noel and R.Amarnath (2014) Impact of Electroplating industry effluent residue on growth, biochemical characteristics and yield of Cow pea *Vigna unguiculata*. Indian Journal of Applied Research, 4(5): 21-22. **Impact factor: 2.1652**
6. M.R. Rajan, M.Prema and S. David Noel (2014) Field level study on the Impact of Zinc Electroplating industry effluent residue on growth, biochemical characteristics and yield of Cluster Bean *Cyamopsis Tetragonoloba*. International Journal of Scientific Research, 3(6):18-19. **Impact factor: 1.8651**
7. Vigneshwaran, P., M.R.Rajan and S. David Noel (2014) Field level study on the Impact of Zinc Electroplating industry effluent residue on growth, biochemical characteristics and yield of Brinjal *Solanum melongena*. Indian Journal of Applied Research, 4(6):55-56. **Impact factor: 2.1652**
8. M.R.Rajan, S. David Noel and V.Palaniselvi (2014) Field level study on the impact of Zinc Electroplating industry effluent residue on growth, biochemical characteristics and yield of Black gram *Vigna mungo*. Indian Journal of Applied Research, 4(12): 5-7. **Impact factor: 2.1652**

TELEPHONE: 23232701, 23237721, 23234116
FACSIMILE: 23232317, 23236735, 23239437

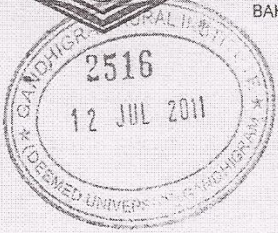
GRI FINANCE SECTION
BILL / TAPAL No.



14 JUL 2011
विश्वविद्यालय अनुदान आयोग
बहादुरशाह जफर मार्ग
नई दिल्ली-110 002

FS-TT
12.9.11

UNIVERSITY GRANTS COMMISSION
BAHADURSHAH ZAFAR MARG
NEW DELHI-110 002



14 JUL 2011

Sl. No. 40-0482011 (SR)

The Under Secretary (FD-III)
University Grants Commission
New Delhi-110002

Subject: UGC support for the Major Research Project in Physical Sciences, Bio-Sciences, Maths, Medical, Agricultural Sciences and Engineering & Chemistry to University/College Teachers – Project entitled, "Bio-friendly utilization of electroplating industrial effluent residue for growing certain crop plants"

Sir,
I am to refer to your letter forwarding the application of Dr. M.R. Rajan of your institution for financial assistance under the above scheme and to convey the Commission's approval & sanction an on account grant of Rs. 3,93,800/- (Rupees: three lakh ninety three thousand eight hundred only) to the Director, Gandhigram Rural Institute, Gandhigram in r/o Major Research Project of Dr. M.R. Rajan, Department of Environmental Science for the period of 3 years w.e.f. 1.7.2011 as detailed below:-

Sl.No.	ITEMS	Period 3 years from 1.7.11 to 30.6.14	AMOUNT APPROVED	GRANT RELEASED AS 1st INSTALMENT
A.	Non - Recurring			
1.	Books & Journals		20,000/-	70,000/-
2.	Equipment (Dataprocessor)		50,000/-	
B.	Recurring			
1.	Honorarium to Retd. Teacher @ Rs. 12, 000/- p.m.		nil	3,23,800/-
2.	Project Fellow @ 8, 000/- p.m.		2,88,000/-	
3.	Chemical/ Glassware / Consumable		1,30,000/-	
4.	Hiring Services		40,000/-	
5.	Contingency		40,000/-	
6.	Travel/Field Work		50,000/-	
7.	Overhead Charges @ Rs. 10% approved recurring Grant (Except Travel & Field Work)		49,800/-	
	Total (A + B)		6,67,800/-	3,93,800/-

The acceptance Certificate in prescribed format attached Annexure 1 may be sent to the undersigned within one month from the issue of the award letter failing which the project may be treated as cancelled.

If the terms & conditions are acceptable, as per guideline which are available on UGC web-site www.ugc.ac.in the Demand Draft/ Cheque being sent may be retained. Otherwise the same may be returned in original to the commission by Registered Post in variably with in 15 days from the receipt of the Demand Draft/Cheque.

Principal Investigators should ensure that the utilization Certificate to the effect that the grant has been utilized for the purpose for which it has been sanctioned shall be furnished to the University Grants Commission in time.

The final report of the project may be submitted in typed form as well as electronically i.e. in floppy/CD

1. The sanctioned amount is debit to the Major Head 4. (i).a (31) Rs. 3,23,800/- & 4. (i).a (35) Rs. 70,000/- and is valid for payment during financial year 2011-12.
2. The amount of the Grant shall be drawn by the Under Secretary (drawing and Disbursing Office), University Grants Commission on the Grants-in-aid Bill and shall be disbursed to and credited to the University/College, Gandhigram Rural Institute, Gandhigram through Cheque/Demand Draft/ Mail Transfer.
3. The Grants is subject to the adjustment of the basis of Utilization Certificate in the prescribed performa submitted by the University/Colleges/institution.
4. The University/College shall maintain proper accounts of the expenditure out of the grants which shall be utilized only on approved items of expenditure.
5. The Utilization Certificate of the effect that the grant has been utilized for the purpose for which it has been sanctioned shall be furnished to the University Grants Commission as early as possible after the close of the current financial year.
6. The assets acquired wholly or substantially out of University Grant Commission's grant shall not be disposed or encumbered or utilized for the purposes other than those for which the grant was given, without proper sanction of the University Grants Commission and should, at any time the College/University ceased in function such assets shall revert to the University Grant Commission.
7. A Register of assets acquired wholly or substantially out of the grant shall be maintained by the University/College in the prescribed form.
8. The grantee institution shall ensure the utilization of grant-in-aid for which it is being sanctioned/paid. In case non-utilization/partial utilization, the simple interest @ 10% per annum as amended from time to time on unutilized amount from the date of drawl to the date of refund as per provisions contained in General Financial Rules of Govt. of India will be charged.
9. The interest earned by the University/College/Institute on this grants in aid shall be treated as additional grant and may be shown in the Utilization Certificate/Statement of expenditure to be furnished by grantee institution.
10. The University/College/Institute shall follow strictly all the instructions issued by the Government of India from time to time with regard to reservation of posts for Scheduled Castes/Scheduled Tribes/OBC/PH etc.
11. The University/College shall fully implement to Official Language Policy of Union Govt. and comply with the Official Language Act, 1963 and Official Languages (Use for Official purposes of the Union) Rules, 1978 etc.
12. The sanction issues in exercise of the delegation of powers vide Commission Office Order No. 25/92 dated May 01, 1992.
13. An amount of Rs. _____ out of the grant of Rs. _____ sanctioned vide letter No. F. 40-146/2011 (SR) dated _____ has been utilized by University/College/Institution for the purpose for which it was sanctioned. Utilization Certificate for Rs. _____ has already been entered at S.No. _____ now we may enter Utilization Certificate for Rs. _____ S.No. _____ and in the U. C. Registrar at page No. _____
14. It is also certified from the B.C.R. that the funds are available under the scheme. Entered in BCR at S.No. 170.
15. The above grant is sanctioned against the budget provision of Rs. _____ during the current financial year leaving a balance of Rs. _____ under the head of Account 4. (i).a (31) Rs. 3,23,800/- & 4. (i).a (35) Rs. 70,000/-
16. The funds to the extent are available under the Scheme.
17. The University/Institution/College is strictly following the UGC regulations on curbing the menace of ragging in Higher Educational Institutions, 2009.

(Dr. K.C. Pathak)
Joint Secretary

Copy forwarded for information and necessary action for:-

1. The Director, Gandhigram Rural Institute, Gandhigram-624302, TN, Acknowledgement for the receipt of DD / Cheque / Mail Transfer for Rs. 3,93,800/- may be sent to the Under Secretary, Finance Division III, UGC,
2. Dr. M.R. Rajan, Principal Investigator, Department of Biology Gandhigram Rural Institute, Gandhigram, 624302, TN
3. office of the Director General of Audit, Central Revenues, A. G. C. R. Building, I. P. Estate, New Delhi.
4. The Registrar.

(Kamla Batra)
Deputy Secretary



**UNIVERSITY GRANTS COMMISSION
BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002**

FD Diary No. 3855
Dated : 17/09/2014

F.No.40-048/2011 (SR)

Dated: September, 2014

The Under Secretary (FD-III)
University Grants Commission
Bahadur Shah Zafar Marg
New Delhi - 110002

11 OCT 2014

Subject: Release of Grant-in aid to Gandhigram Rural Institute, Gandhigram-624 302, T.N. for the year 2014-15 under plan in respect of Major Research Project entitled "Bio-friendly utilization of electroplating industrial effluent residue for growing certain crop plants" awarded to Dr. M.R. Rajan, Dept. of Environment Science tenure of the project from 01.07.2011 to 31.12.2014.

Sanction: It is directed to convey the sanction of the University Grants Commission for payment of grant of Rs. 3,93,935/- (Rupees Three lakh ninety three thousand nine hundred thirty five Only) as Second instalment for the year 2014-15 towards Major Research Project to The Registrar, Gandhigram Rural Institute, Gandhigram-624 302, T.N for the plan expenditure to be incurred during 2014-15.

Name of the Item	Amount Allocated	Head of Account	Grant now Being Sanctioned	Grant already Released	Total Grant
Books & Journals	20,000/-	3(A)2202.03.102.10.01.35	-----	20,000/-	20,000/-
Equipment	50,000/-		-----	50,000/-	50,000/-
Project Fellow	4,90,133/-		2,97,120/-	1,44,000/-	4,41,120/-
Nil	-----	3(A)2202.03.102.10.01.31	-----	-----	-----
Memorandum to Govt. P.I.	-----		-----	-----	-----
Travel/Fieldwork	50,000/-		20,000/-	25,000/-	45,000/-
Chemicals	1,30,000/-		52,000/-	65,000/-	1,17,000/-
Contingency	40,000/-		16,000/-	20,000/-	36,000/-
Printing Services	40,000/-		16,000/-	20,000/-	36,000/-
Overhead Charges	49,800/-		-----	49,800/-	49,800/-
Total	8,69,933/-		4,01,120/- -7,185/- (Interest.) =3,93,935/-	3,93,800/-	7,94,920/-

The sanctioned amount is debitable to Major Research Project head 0940202.03.102.10.01.31 the financial year 2011-15 only

The amount of the Grant shall be drawn by the Under Secretary (Drawing and Disbursing Officer) UGC on the Grants-in-aid bill and shall be disbursed to and credited to The Registrar, Gandhigram Rural Institute, Gandhigram-624 302, T.N through Electronic mode as per the following details:-

A. Details (Name & Address) of Account Holder:	The Registrar, Gandhigram Rural Institute, Gandhigram-624 302, T.N
B. Account No:	85001010012515
C. Name & address of Bank branch:	Canara Bank, GRU Branch, Code-8500, GRI Campus, Gandhigram-624 302
D. MICR Code:	620015024
E. IFSC Code:	CNRB0008500
F. Type of Account:	Saving

1. The Grant is Subject to the adjustment on the basis of Utilization Certificate in the prescribed proforma submitted by the University / Institution.
2. The University / Institution shall maintain proper accounts of the expenditure out of the Grants which shall be utilized only on the approved items of expenditure.
3. The University / Institution may follow the General Financial Rules, 2005 and take urgent necessary action to amend their manuals of financial procedures to bring them in conformity with GFRs, 2005 and those don't have their own approved manuals on financial procedures may adopt the provisions of GFRs, 2005 and instructions / guidelines there under from time to time.
4. The Utilization Certificate to the effect that the grant has been utilized for the purpose for which it has been sanctioned shall be furnished to UGC as early as possible after the close of current financial year.
5. The assets acquired wholly or substantially out of University Grants Commission's Grant shall not be disposed or encumbered or utilized for the purposes other than those for which the grants was given without proper sanction of the UGC and should at any time the University ceased to function, such assets shall revert to the University Grants Commission.
6. A Register of Assets acquired wholly or substantially out of the grant shall be maintained by the University in the prescribed proforma.
7. The grantee institution shall ensure the utilization of grants-in-aid for which it is being sanctioned / paid. In case of non-utilization / part utilization thereof, simple interest @ 10% per annum, as amended from time to time on the unutilized amount from the date of drawal to the date of refund as per provisions contained in General Financial Rules of Govt. of India, will be charged.
8. The University / Institutions shall follow strictly the Government of India / UGC's guidelines regarding implementation of the reservation policy [both vertical (for SC, ST & OBC) and horizontal (for persons with disability etc.)] in teaching and non teaching posts.
9. The University / Institution shall fully implement the Official Language Policy of Union Government and comply with the Official Language Act, 1963 and Official Languages (Use for Official Purposes of the Union) Rules, 1978 etc.

10. The sanction is issued in exercise of the delegation of powers vide UGC Order No. 100/2013 [F.No.10-11/12 (Admn. IA & B)] dated 28/5/2013.
11. The University / Institution shall strictly follow the UGC Regulations on curbing the menace of Ragging in Higher Education Institutions, 2009.
12. The University / Institution shall take immediate action for its accreditation by National Assessment & Accreditation Council (NAAC).
13. The accounts of the University / Institution will be open for audit by the Comptroller & Auditor General of India in accordance with the provisions of General Financial Rules, 2005.
14. The annual accounts i.e. balance sheet, income and expenditure statement and statement of receipts and payments are to be prepared strictly in accordance with the Uniform Format of Accounting prescribed by Government.
15. An amount of Rs. 3,32,255/- out the grant of Rs. 3,83,800/- sanctioned vide order No.F.40-148/2011(SR) dated 04.07.2011 has been utilized by University/College/Institution for the purpose for which it was sanctioned. Utilization Certificate for Rs.....has already been entered at S. No. Now we may enter Utilization Certificate for Rs. 3,32,255/- S.No..... and in the U.C. Register at page No.....
16. Funds to the extent of Rs..... are available under the scheme or RF / RE of the year.
17. This issues with the concurrence of IFO vide Diary No. 779 dated 25/6/2013.
18. This issues with the approval of Joint Secretary (MRP) vide Diary No. 2568 dated 27.12.2013. As revalidated by Chairman, UGC for the financial year 2014-2015 vide Diary No. 28796 dated 07/05/2014.
19. The tenure of the project has been extended upto 31.12.2014.

Yours faithfully,

(G. S. Aulakh)
Under Secretary

Date forwarded for information and necessary action for :-

1. The Registrar, Gandhi Gram Rural Institute, Gandhigram-624 302, T.N.
2. Office of the Director General of Audit, Central Revenues, AGCR Building, I.P. Estate, New Delhi.
3. Accountant General, State Govt. of Tamil Nadu, Chennai.
4. Dr. M.R. Rajan, Dept. of Environment Science, GandhiGram Rural Institute, Gandhigram-624 302, T.N.
5. Guard file.

(Shyam Bahadur Sah)
Section Officer

