



# Kerala State Council for Science, Technology and Environment

Dr. Anilkumar C  
Principal Scientist & Head  
Science Education Division, KSCSTE

03-06-2017

23/SPS 61/2017/KSCSTE

Dear Dr. Tessy Paul P,

Sub:- Financial assistance for student project scheme of KSCSTE reg.  
Ref:- Your application dated 27.12.2017

This is to invite your attention to the reference cited and to inform that the project proposal titled **An investigation on the algal diversity of selected ponds in avinissery panchayath, Thrissur district Kerala** submitted by Dr. Tessy Paul P as PI and Ms. Arya C.S as student investigator(s) has been approved. An amount of **₹7000/-** is sanctioned by the Council. The budget estimate of the project is detailed below.

SL.NO.	ITEMS	AMOUNT(₹)
1.	Consumables	5000
2.	Travel	1000
3.	Research Literature & Documentation	1000
4.	Others	-
	<b>Total</b>	<b>7000</b>

The PI has to submit the signed Terms and Conditions, details of Bank Account of Head of the Institution (Beneficiary Name, Account no. , Address, IFS code) and the date of start of the project within two weeks to the undersigned. On completion of the project you should submit one hard copy and a soft copy of the final report (in pdf to [spkscste@gmail.com](mailto:spkscste@gmail.com)), audited Statement of Expenditure and Utilization Certificate counter signed by the Head of the Institution for releasing the grant. The format for final report, SE & UC can be downloaded from [www.kscste.kerala.gov.in](http://www.kscste.kerala.gov.in).

Thanking you,

Yours sincerely,

Anilkumar C

To  
✓ Dr. Tessy Paul P, Professor, Botany, Christ College (Autonomous), Irinjalakuda, Thrissur 680125

Copy to:

The Principal, Christ College (Autonomous), Irinjalakuda Thrissur 680125

Ms. Arya C.S, student Christ College (Autonomous), Irinjalakuda Thrissur 680125

# **AN INVESTIGATION ON THE ALGAL DIVERSITY OF SELECTED PONDS IN AVINISSERY PANCHAYATH, THRISSUR DISTRICT, KERALA**

## **STUDENT PROJECT FINAL REPORT**

*Financial assistance provided by*

**KERALA STATE COUNCIL FOR SCIENCE, TECHNOLOGY AND ENVIRONMENT (KSCSTE)**

**THIRUVANANTHAPURAM**

**23/SPS 61/2017/KSCSTE Dated 3<sup>rd</sup> June, 2017**

*Principal Investigator*

**Dr. TESSY PAUL. P.**

Associate Professor & HOD, Department of Botany  
Christ College (Autonomous), Irinjalakuda

*Student Investigator*

**Ms. ARYA C. S.**

IV Semester M.Sc. Botany



**DEPARTMENT OF BOTANY  
CHRIST COLLEGE (AUTONOMOUS), IRINJALAKUDA  
THRISSUR – 680 125, KERALA**

**(Affiliated to University of Calicut & Nationally recredited with 'A' grade)**

**MARCH 2018**

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**Principal Investigator**

**Dr. TESSY PAUL. P.**

Associate Professor & HOD, Department of Botany  
Christ College (Autonomous), Irinjalakuda

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**Ms. ARYA C. S.**

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**MARCH 2018**



# **FORMAT FOR SUBMISSION OF THE STUDENT PROJECT FINAL REPORT**

## **AN INVESTIGATION ON THE ALGAL DIVERSITY OF SELECTED PONDS IN AVINISSERY PANCHAYATH, THRISSUR DISTRICT, KERALA**

**Student Investigator: Ms. ARYA C. S.**

*Financial assistance provided by:*

**KERALA STATE COUNCIL FOR SCIENCE, TECHNOLOGY AND ENVIRONMENT  
(KSCSTE), THIRUVANANTHAPURAM**

**23/SPS 61/2017/KSCSTE Dated 3<sup>rd</sup> June 2017**



**DEPARTMENT OF BOTANY  
CHRIST COLLEGE (AUTONOMOUS), IRINJALAKUDA,  
THRISSUR – 680 125, KERALA**

*(Affiliated to University of Calicut & Nationally reaccruited with 'A' grade)*

**Principal Investigator  
Dr. TESSY PAUL. P.**

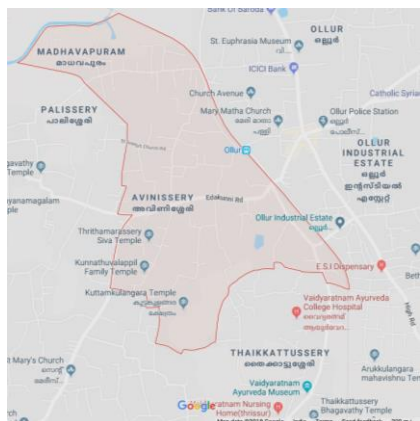
# **KERALA STATE COUNCIL FOR SCIENCE, TECHNOLOGY AND ENVIRONMENT (KSCSTE)**

## **FORMAT FOR STUDENT PROJECT REPORT**

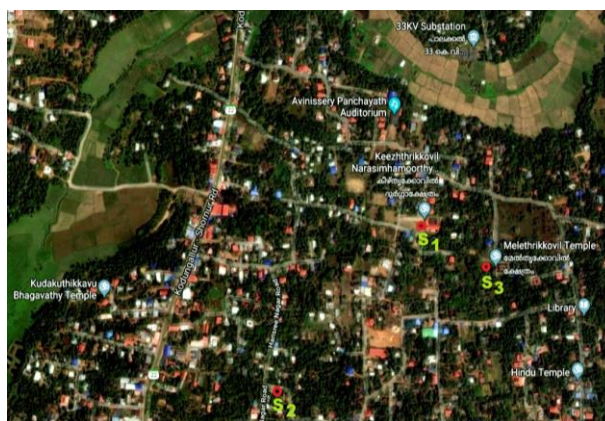
1. Project Title: **An investigation on the algal diversity of selected ponds in Avinissery Panchayath, Thrissur District, Kerala**
2. File No: **23/SPS 61/2017/KSCSTE Dated 03-06-2017**
3. Name & Address of the student: **Ms. ARYA C.S.**  
IV Semester, M.Sc. Botany,  
Christ College (Autonomous), Irinjalakuda,  
Thrissur (Dt.), PIN 680 125  
Permanent Address: Chennat House, Karuvannur (PO)  
Thrissur (Dt.), PIN 680 711
4. Name & Address of the  
Principal Investigator with mobile No. : **Dr. TESSY PAUL P.**  
HOD and Associate Professor,  
Department of Botany,  
Christ College (Autonomous),  
Irinjalakuda, PIN- 680 125  
Mob: 9446233104  
  
Co-Investigator: **NIL**
5. Broad area of Research: **BOTANY**
6. Specific area: **PHYCOLOGY**
7. Date of Start: **20-12-2016**
8. Total cost of Project: **Rs. 7, 000 /-**
9. **APPROVED OBJECTIVES OF THE PROPOSAL:**
  - Documentation of the algal diversity of selected ponds in Avinissery Panchayath, Thrissur District, Kerala.
  - To analyse the selected physico-chemical parameters of the ponds under study.
  - To prepare photomicrographs of algae occurring in the selected ponds and identify them up to species level.
  - Estimation of abundance of phytoplankton in the selected ponds.
  - Analysis of pollution tolerant algae in the selected ponds.

## 10. METHODOLOGY:

The study was conducted at Avinissery Panchayath, in Thrissur District, 6 km from district headquarters, in the state of Kerala, India, which spread over an area of 7.82 km<sup>2</sup>. Three ponds are selected for the present study and they are Keezhethrikkovil temple pond (S<sub>1</sub>), Kakkathikulam pond (S<sub>2</sub>) and Melethrikkovil temple pond (S<sub>3</sub>).



**Fig. 1. Google Map of Avinissery, Thrissur District, Kerala State**



**Fig. 2. Google map showing selected ponds in Avinissery Panchayath**

**Pond 1 – Keezhethrikkovil Temple Pond (S<sub>1</sub>):** Avinissery is famous for its Keezhethrikkovil temple. The Hindus alone are permitted to enter this temple, many people also believing in Narasimhamoorthi, is said to have originated in the holy city of Kashi. Keezhethrikkovil temple pond is situated within the temple premises and is well protected.

**Pond 2 – Kakkathikulam Pond (S<sub>2</sub>):** The Kakkathikulam pond serves as a source of water for the agriculture fields in Avinissery Panchayath. It is a perennial pond and is situated at Cheruvathery which is an agriculture area. Kakkathikulam pond is larger, compared to other two ponds selected for the present study.

**Pond 3 – Melethrikkovil Temple Pond (S<sub>3</sub>):** Melethrikkovil is a famous temple in Avinissery Panchayath. Hindus alone are permitted to enter this temple and the deity is Vamanamoorthi. Vamanamoorthi is the avathara of Lord Maha Vishnu. This temple pond is situated near the Melethrikkovil temple.

The water samples were collected from the selected ponds of Avinissery Panchayath in the month of January 2017 for physico-chemical analysis in the

morning hours between 7 a.m. and 8 a.m. in one litre plastic containers. The turbidity, electrical conductivity, pH, total dissolved solids (TDS), acidity, alkalinity, total hardness, calcium, magnesium, chloride and salinity are the parameters analyzed using standard methods (APHA, 1998; Trivedi *et al.*, 1998).

The surface water samples were collected for a period of six months from January to June, 2017 between 7 a.m. and 8 a.m. in one litre plastic containers and were properly labelled. The collected samples were fixed and preserved with 4% formaldehyde solution. 500 ml of samples were also collected in another bottle from each pond for observing the algae in live condition.

The temporary slides were prepared from the collected algal samples and are observed under the trinocular research microscope (Labovision KX I 2000). The photomicrographs were taken with the digital camera (Cam IS 300, 3 megapixels) and were saved as JPEG images in computer.

The algae were identified with the help of ICAR monographs and taxonomical publications (Desikachary, 1959; Scott and Prescott, 1961; Philipose, 1967; Iyengar and Desikachary, 1981; Prescott, 1982; Sarode and Kamat, 1984; Sinha and Naik, 1997; Perumal and Anand, 2008). The pollution tolerant algae found in the study area were analyzed according to Palmer (1969).

One litre water samples were collected for the phytoplankton estimation in the month of April 2017 and are preserved immediately in 4 % formalin solution. The samples were concentrated to 50 ml and the number of phytoplankton per litre was counted by Sedgwick-Rafter (S-R) cell method (APHA, 1998).

## **11. SALIENT RESEARCH ACHIEVEMENTS:**

### **A. NEW OBSERVATIONS:**

## **ANALYSIS OF HYDROGRAPHIC PARAMETERS**

In the present study the water quality of the three ponds analysed with respect to the algal diversity. The samples for water analysis were collected during January 2017. The physico-chemical parameters such as, turbidity, conductivity, pH, TDS, acidity, alkalinity, total hardness, calcium, magnesium, chloride and salinity of the selected ponds are given in Table 1. During the period of study, the

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**Dr. TESSY PAUL P.**

Associate Professor & Head,  
Department of Botany,  
Christ College (Autonomous), Irinjalakuda,  
Thrissur District – 680 125

Ph. 9446233104  
E-mail: tetsyjohnt@gmail.com

To

Dr. Anilkumar C.

Principal Scientist & Head, Science Education Division,  
Kerala State Council for Science, Technology & Environment,  
Sasthra Bhavan, Pattom, Thiruvananthapuram – 695 004,  
Kerala, India

Irinjalakuda  
12-06-2018

**Sub: Final Report of the Student Project – Ms. ARYA C.S.**

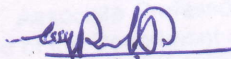
**Ref: File No: 23 / SPS 61 / 2017 / KSCSTE Dated 03-06-2017**

Sir,

Here with please find the *Final Report and the enclosures* for the Student Project of **Ms. Arya C.S.** IV Semester M.Sc. Botany student of Christ College (Autonomous), Irinjalakuda, doing the student project under my guidance, entitled “*An investigation on the algal diversity of selected ponds in Avinissery panchayath, Thrissur District, Kerala*”.

Thanking you

Yours sincerely



**Dr. TESSY PAUL P.**

**Dr. TESSY PAUL P.**

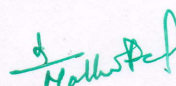
Associate Professor &  
Head of the Department of Botany  
Christ College (Autonomous)  
Irinjalakuda-680 125

**Enclosures:**

1. Bound copy of the Student Project final report.
2. CD – Soft copy of the final report of the Student Project.
3. Format for submission of Student Project final report.
4. Utilization Certificate for Rs. 7,000/- – 2 copies
5. Statement of expenditure of Student Project – 2 copies

**Recommended and Forwarded:**



  
Principal,  
Associate Professor,  
Christ College (Autonomous),  
Irinjalakuda, Thrissur District.



# STATEMENT OF EXPENDITURE

Project Title: An investigation on the algal diversity of selected ponds in Avinissery Panchayath, Thrissur district, Kerala.  
 Name of Institution: Christ College (Autonomous), Irinjalakuda

Receipts	Amount (Rs.)	Payments	Amount (Rs.)
1. Amount sanctioned from KSCSTE (to be receivable) <u>Consumables</u>	<u>5000</u>	1. <u>Consumables</u>	<u>5050</u>
2. <u>Travel</u>	<u>1000</u>	2. <u>Travel</u>	<u>1083</u>
3. <u>Research Literature &amp; Documentation</u>	<u>1000</u>	3. <u>Research Literature &amp; Documentation</u>	<u>2143</u>
4. <u>Others</u>	<u>—</u>	4. <u>Others</u>	<u>—</u>
<b>Total</b>	<b><u>7000/-</u></b>	<b>Total</b>	<b><u>8276/-</u></b>

Certified that I have exercised all kinds of checks to see that the grant has been utilized for the purpose for which it was sanctioned by KSCSTE.

Dr. TESSY PAUL P.  
 Name & Signature  
 of Principal Investigator

**Dr. TESSY PAUL P.**  
 Associate Professor &  
 Head of the Department of Botany  
 Christ College (Autonomous)  
 Irinjalakuda-680 125

Dr. H. H. Paul  
 Name & Signature  
 of Head of the Institution  
 Associate Professor-  
 In-charge of Principal  
 Christ College (Autonomous), Irinjalakuda



**For T. I. J. & ASSOCIATES**  
**Chartered Accountants**  
 Name & Signature T. I. Jose  
 of Chartered Accountant 26/3/18

**T. I. Jose** (Proprietor),  
**M.No. 200142**





## UTILIZATION CERTIFICATE

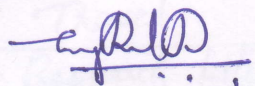
Certified that out of Rs. 7000/- sanctioned by Kerala State Council for

Science, Technology and Environment towards financial assistance for the student project titled An investigation on the algal diversity of selected ponds in Avinissery, Panchangath, Thiruvananthapuram district, Kerala an amount

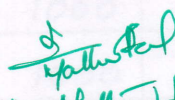
of Rs. 7000/- was utilized for the purpose for which it was sanctioned, leaving a

balance of Rs. .... NIL at the close of Rs 8276/- as shown in the Statement of

Expenditure annexed.


  
Dr. TESSY PAUL P.  
Name & Signature  
of Principal Investigator

Dr. TESSY PAUL P.  
Associate Professor &  
Head of the Department of Botany  
Christ College (Autonomous)  
Irinjalakuda-680 125

  
Dr. Mathew Paulose  
Name & Signature  
of Head of the Institution

Associate Professor-  
In-charge of Principal  
Christ College (Autonomous), Irinjalakuda



**For T I J & ASSOCIATES**  
**Chartered Accountants**  
PRN - 015443s  
  
Name & Signature  
of Chartered Accountant 26/3/18  
M.No. 200142

