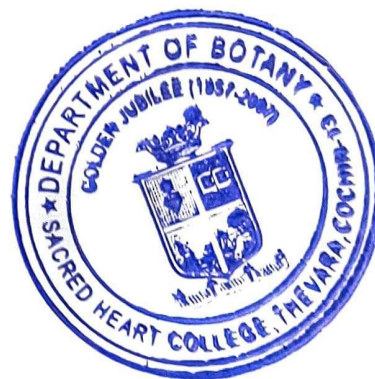


# **A Study on Mycorrhizal Association in *Elettaria cardamomum* (L.) Maton from selected regions of Idukki district**

*Dissertation Submitted to  
Mahatma Gandhi University, Kottayam  
In partial fulfilment of the  
Degree of Master of Science in Botany*

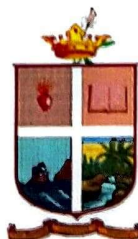
**Submitted By  
JOBY JAMES  
REG.NO:17PBOT1764**



Valued  
1. Shy D. J. 6/6/19  
2. 4/6/19



**SACRED  
HEART  
COLLEGE**  
Autonomous



**POST GRADUATE AND RESEARCH DEPARTMENT OF BOTANY  
SACRED HEART COLLEGE (AUTONOMOUS), THEVARA, COCHIN**

**2018 – 2019**



**SACRED  
HEART  
COLLEGE**  
Autonomous



**POST GRADUATE AND RESEARCH  
DEPARTMENT OF BOTANY  
SACRED HEART COLLEGE  
(AUTONOMOUS), THEVARA, KOCHI**

## **CERTIFICATE**

This is to certify that the project work entitled “**A Study on Mycorrhizal Association in *Elettaria cardamomum* (L.) Maton from selected regions of Idukki district**” is an authentic record of project work done by **Joby James (Register No: 17PBOT1764)** at **Sacred Heart College (Autonomous), Thevara, Kochi** under the supervision and guidance of **Mr. Ebin P J, Assistant Professor, Department of Botany, Sacred Heart College, Thevara**. No part of the work embedded in this dissertation has been submitted earlier for the award of any other degree.

03/06/2019

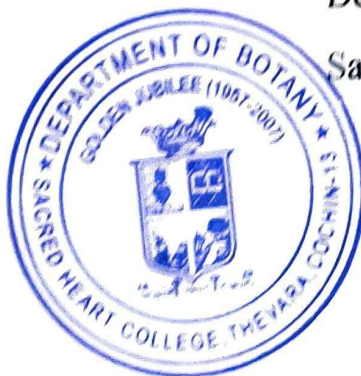
Thevara

Fr. Dr. Jose John,

Head of the Department

Department of Botany

Sacred Heart College, Thevara



Dr. (Fr.) Jose John M.Sc., Ph.D., M.Ed., PGDCA  
Head of the Department of Botany  
Sacred Heart College (Autonomous)  
Thevara, Cochin-682 013



**SACRED  
HEART  
COLLEGE**  
Autonomous



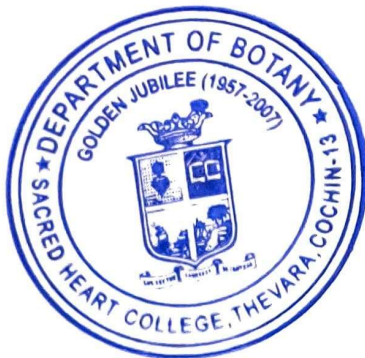
**POST GRADUATE AND RESEARCH  
DEPARTMENT OF BOTANY  
SACRED HEART COLLEGE  
(AUTONOMOUS), THEVARA, KOCHI**

## **CERTIFICATE**

This is to certify that the project report entitled “A Study on Mycorrhizal Association in *Elettaria cardamomum* (L.) Maton from selected regions of Idukki district” is an authentic record of project work done by Joby James (Reg.No:17PBOT1764) at Sacred Heart College (Autonomous), Thevara, Kochi under my supervision, in partial fulfillment for the award of the Master of Science in Botany of Mahatma Gandhi University, Kottayam, Kerala and that no part of this work has not been submitted earlier for the award of any other degree or diploma.

03/06/2019

Thevara



Ebin P J

(Project Guide)

Assistant Professor

Department of Botany

Sacred Heart College, Thevara



## Urkund Analysis Result

Analysed Document: Joby\_final edited.pdf (D53173740)  
 Submitted: 5/30/2019 11:41:00 AM  
 Submitted By: sanjojose@gmail.com  
 Significance: 8 %

### Sources included in the report:

[https://archive.org/stream/PlantPhysiologyTaizZeiger1/Plant\\_Physiology\\_\(Taiz\\_%2526\\_Zeiger\)\[1\].djvu.txt](https://archive.org/stream/PlantPhysiologyTaizZeiger1/Plant_Physiology_(Taiz_%2526_Zeiger)[1].djvu.txt)  
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3730808/>  
[https://www.researchgate.net/publication/318312234\\_Arbuscular\\_Mycorrhizal\\_Fungi\\_and\\_its\\_Role\\_in\\_Sequestration\\_of\\_Heavy\\_Metals](https://www.researchgate.net/publication/318312234_Arbuscular_Mycorrhizal_Fungi_and_its_Role_in_Sequestration_of_Heavy_Metals)  
<https://pdfs.semanticscholar.org/eef9/50b20dc6d1019f6034789b65b64b18d223bb.pdf>

### Instances where selected sources appear: