ACKNOWLEDGEMENT

I am deeply indebted to my supervisor and guide Dr. M. Vasanthy, Lecturer, Department of Environmental Biotechnology, Bharathidasan University, Trichirappalli for her help, stimulating suggestions, encouragement, unflinching support, cherishing attitude, benign, gracious character, scientific freedom, untiring, ever willing and constant guidance during the time of research and writing of this thesis. Her perpetual energy and enthusiasm in research had motivated all her advisees, including me. In addition, she was always accessible and willing to help her students with their research. As a result, research life became smooth and rewarding for me.

It gives me immense pleasure to thank Prof. R.T. Panneer Selvam, Principal, Government Arts College, Ariyalur for providing necessary facilities and constant encouragement.

I feel immense pleasure to express my heart felt gratitude to the Doctoral committee members Dr. S. Kalavathy, Reader, Department of Botany, Bishop Heber College, Trichy – 17 and Dr. Prabavathy Nagarajan, Reader, PG and Research Department of Chemistry, Bishop Heber College, Trichy for their valuable guidance, blessing and for their kindness during my research work.
I wish to register my special thanks to **Mr. M. Alagappamoses**, Selection Grade Lecturer and **Dr. C. Ravichandran**, Reader and Head, PG and Research Department of Environmental Sciences, Bishop Heber College, Trichy-17 for their valuable suggestions and constant encouragement throughout the investigation.

I am pleased to thank **Dr. P. Lakshmanaperumalsamy**, Registrar, Karpagam University, Coimbatore for his blessings and encouragement.

My acknowledgements are due to **Dr. P.K. Goel**, Editor, Nature, Environment and Pollution technology, Karad, and **Dr. Arvind Kumar**, Chief Editor, Journal of Current Sciences, Dumka for their timely help.

I am very much grateful to the publishers who have published my research work in their esteemed journals.

I wish to extend my deep gratitude to **Dr. S. Saravanan**, Chairman, Biomedical Medical Research Foundation, Selam, **Mrs. Valarmathy**, Junior Lab assistant, TWAD, Perambalur, and **Mr. S. Kumaravel**, Scientist, Paddy Processing Research Center, Tanjore for permitting to utilize their GC-MS laboratory.

I record my thanks to **Dr. M. Krishnan**, Professor and Head, Department of Environmental Biotechnology, Co-ordinator, School of Environmental Sciences and **Dr. K. Kumarasamy**, Professor and Head, Department of Earth
I render my sincere thanks to Dr. N. Parthasarathy, Professor, Department of Ecology, Pondicherry University, Pondicherry for his valuable suggestions and to Dr. S.A. Abbasi, Head, Centre for Pollution Control and Energy technology, Pondicherry University, Pondicherry for permitting to utilize the library facility.

I convey my sincere thanks to Dr. M.N. Abubaecker, Reader and Head, PG and Research Department of Botany, National College, Trichy for permitting to utilize their microbiological laboratory.

I am thankful to Mr. Kannan, Agricultural Officer, Trichy for his valuable suggestions and help.

I owe my gratitude to Mr. Sahayaraj, Lecturer and Head, faculty members of Department of Computer Science, Government Arts College, Ariyalur for their timely help.

The help of librarians of TNPCB of Chennai, Pondicherry University, Bharathiar University, Bishop Heber College and several other Institutions are gratefully acknowledged for their assistance in literature collection through out the investigation.
I am most grateful and deeply indebted to Mr. R.K. Ravindranath gupta, LIC, Mr. R. Muthunarayanan, Advocate for their moral support and their constant encouragement and my special thanks to Master R.V. Aakash for his kind co-operation.

I sincerely submit my due respect to my beloved mother Mrs. A. Rajeswari and father Mr. R. Anbarasu for their unfailing love and affection without which I would not be what I am.

I once again thanks my beloved brothers Mr. A. Padmanaban and Mr. A. Ramadosss who have encouraged me to do my level best.

I extend my thanks to my dear sister Mrs. A. Akilandeswari Madhavan for her constant encouragement provided by her to me during my research work.

I express my thanks to Mr. M. Srimurugan, Insurance Claims Investigator, and Mr. M. Praburam, Financier, Villupuram for their timely help and suggestions.

I am thankful to my seniors Dr. Mrs. M. Sangeetha, Environmental consultant, Dubai, Dr. Mrs. C. Thamaraiselvi, Pudukkotai and Mr. M. Jeganathan, Ariyalur for their help and suggestions.
I am thankful to the Ph.D., my junior Research scholars Mr. Karthikeyan, CPCB, Bangalore, Mr. R. Velmurugan, Miss. G. Seethadevi, and Miss. M. Santhiya, Department of Environmental Biotechnology, Bharathidasan University, Trichy for their help.

I am grateful to Mr. T. Dhanavel, Mr. K. Selva, K. Ramesh and R. Karthik for various technical assistance in the preparation of the research work.

I thank the GOD Almighty with devotion who guides me in the right path for the successful completion of the research work.