Acknowledgements

I express my deep sense of gratitude to my research guide Dr. A. B. Chaudhari, Professor and Head, Department of Microbiology, School of Life Sciences, North Maharashtra University, Jalgaon for constructive discussions, guidance and constant encouragement throughout my research work. He made persistent efforts to perfect me as a researcher to be methodical, assiduous and logical with a scientific acuity. I always found him simple, altruistic and meek friend. I think I am still far from over in terms of learning from him.

I extol the genuine cooperation and inspiration offered to me by Prof. Sudhir U. Meshram, present Vice Chancellor and Dr. K. B. Patil, former Vice Chancellor of North Maharashtra University, Jalgaon for their endeavor to acquire traditional and scientific knowledge together and make research applicable from lab to the field level made me realize the real purpose of this investigation.

I seize the opportunity to thank Prof. V. L. Maheshwari, Director, School of Life Sciences, North Maharashtra University, Jalgaon for the assistance and encouragement extended to me during this endeavor.

I gratefully acknowledge the support of University Grant Commission (UGC), New Delhi for granting me the Doctoral fellowship under Faculty Development Programme (FDP). I am also thankful to UGC and DST for supporting infrastructure facility under SAP-DRS and FIST programmes, respectively sanctioned to School of Life Sciences of North Maharashtra University, Jalgaon.

I am highly indebted to Dr. P. H. Pawar, Principal, Z. B. Patil College, Dhule for his help, encouragement and permitting me to do my research work.

I am very grateful to Prof. N. K. Thakare, former Vice Chancellor of North Maharashtra University, Jalgaon for his munificent and inspiring support during my research.

I am also thankful to Prof. S. B. Chincholkar, Department of Microbiology for his helpful suggestions and encouragement during the research work.

Many thanks goes to Mr. Navin Dandi, Asstt. Professor, Department of Microbiology, North Maharashtra University, Jalgaon for extending generous assistance including
phylogenetic analysis of the microbial strains and gas chromatographic analysis of samples.

I also take the opportunity to thank Dr. Yogesh Shouche, Scientist-G, Microbial Culture Collection (MCC), National Center for Cell Sciences, Ganeshkhind, Pune for allowing me to undertake DNA sequencing at his laboratory.

I extend my warmest thanks to Mr. F. N. Sayed (Head, Dept. of Microbiology), teaching and non-teaching staff of Z. B. Patil College, Dhule, Dr. Ulhas K. Patil (Head, Deptt. of Microbiology, R. C. Patel ASC College, Shirpur) and Mr. Nilesh C. Vadnere (Head, Deptt. of Microbiology, C. K. Thakur ASC College, Panvel, Mumbai) for their cooperation and useful discussions.

I feel myself lucky to be associated with my research colleagues namely, Debasree Kundu, Chinmay Hazra, Bhagyashri Dandi, Meghraj Kadam, Jayesh Ahire, Monali Nikam, Madhuri Pawar and Pavan Gavit who have extended continuous assistance in the laboratory as well as maintained an enjoyable and supportive research environment during the tenure. My special gratitude to Mrs. Archana Chaudhari for her constant moral support and encouragement. I am also gratified to Arpana Gunjal, Department of Microbiology, University of Pune, Pune for providing ACC as a kind and generous gift.

To all teaching, non-teaching staff as well as research scholars of the School of Life Sciences, I extend my warmest thanks for their cooperation during my research work.

Diction is not enough to express thank to my wife Sunita, and son Amit for their essential love, help, moral support, cooperation and encouragement throughout my work.

Finally, my late mother was instrumental for what I am today. Her and my fathers’ sheer hard work and dedication inspired me to pursue this doctoral study.

At the end, I would like to dedicate this thesis to all our farmers for realizing me to undertake tough task

Above all, I thank Al-mighty God for showering his blessings upon me.

(Rajendra D. Shelar)