Acknowledgements

Completing a PhD is a long marathon and this would not have been possible without the generous support of many people from the beginning of my work till the end, from technical aid to valuable discussions, from academic to personal guidance, all of which came together to help build these ideas and provide motivation.

First of all, I thank my supervisor and guide Prof. Susy Albert for accepting me as a member of her group and her support for my research work.

I would like to thank Prof. N.S.R. Krishnayya, Head, Dept. of Botany, Prof. Sandhya Kiran Garge, ex-Head Dept. of Botany, and Prof. H. R. Kataria, Dean, Faculty of Science for their continuous administrative support during my Ph.D.

My Special thanks to Prof. Arun Arya for his motivation and support in carrying out experiments during my early days in Ph.D. He also helped me in providing his laboratory instruments and chemicals for my research.

I would like to convey my sincere thanks to Prof. Sunil Kumar Singh for allowing me to use lab facilities for my studies and also for Ph.D. course work. I also thank his lab members for extended support. I take this opportunity to thank Assoc. Prof. Nagesh Chirumamilla for his guidance during Ph.D. course work. I thank Dr. Dhara Gandhi for her help in performing anatomical studies. I acknowledge Prof. Aruna Joshi for providing green house facility during my early research.

I thank Dr. Rajeev Varshney (ICRISAT) for providing Pigeon pea seeds. I thank Dr. Ramesh V. Sonti (CSIR-CCMB), Dr. Gopaljee Jha (NIPGR), Dr. Hitendra K. Patel (CSIR-CCMB) for allowing me to use their instrumentation facility for my studies My special sincere thanks to Dr. Shakuntala E Pillai (CSIR-CCMB) for her scientific inputs throughout my research work.

I thank Mr. Prakash B., Mr. Arvind R., Mr. Mahesh R., Mr. Maruti M. and Mrs. Rukmini S., for all their assistance in the laboratory throughout my Ph.D and administrative work.

My heartfelt thanks to Mr. Ketan Patel, Legal Cell M.S.U for his immense support when I was new in this city.

My heartfelt thanks to Sanket Charola and Karthik Rawal for their unending support, mutual understanding and motivation during my early days in the department and throughout my tough times. I thank my wonderful college friends Vemaiah A., Malleshwar Rao and Venkat A. My special thanks to B.V.S.K Chakraworthy (IISc- Bangalore) for developing my interest in research.

I take this opportunity to thank all the teaching and non-teaching staff members of the Botany Department. I would like to thank all my dissertation students at MSU for their helpful discussions.

Last but not least; I do not know how to express my heartfelt thanks to my Mother, Father and my brother Babulal Nayak for their unending love and support. I thank the Almighty for everything he gave!

Ravinayak