## Acknowledgement

I have much pleasure in expressing my deepest sense of gratitude to my supervisor Dr. Aniruddha Saha, Professor, Department of Botany, University of North Bengal for his untiring guidance, help and involvement throughout the course of my academic endeavors. His incredible availability and pertinent comments largely improved the quality of the work. I never forget the numerous and passionate hours of discussion on and beyond my study topics with him and his confidence in me. I sincerely cannot express in words, my gratefulness to his tremendous support and able guidance throughout the course of this research work.

I would like to thank my co-supervisor Dr. Dipanwita Saha, Assistant Professor, Department of Biotechnology, University of North Bengal, for her inspiration, encouragement and guidance. I am grateful for her constructive suggestions which immensely helped me to sail through my academic endeavour successfully.

I am also indebted to Prof. A Sen (Head), Department of Botany, University of North Bengal, Dr. S.C. Roy, Dr. P. Mandal and Dr. M. Choudhury of the Department for their valuable advice and encouragement throughout the course of this work.

I also like to express my deep sense of gratitude to District Executive Officer, Paschim Banga Go-Sampad Bikash Sanstha, Siliguri Sub-Division for providing Liquid Nitrogen.

I appreciate the help and support of my senior colleagues namely Dr. Bikram Saha, Hrisikesh Mandal, Bilok Sharma, Dr. Sima Mandal, Dr. Gargee Dhar Purkayastha, Dr. Ramasis Kumar.

I gratefully acknowledge the unconditional help and support that I received from Piyali Sarkar, Prosenjit Chakraborty, Arnab Saha, Arup Karmakar, Tanushree Sarkar and Preeti Mangar.

I also greatfully acknowledge University Grants Commission, New Delhi for their financial support in the form of RGNF fellowship for pursuing this work.

It would not have been possible for me to accomplish my Ph.D work without the constant love, affection and encouragement of my beloved parents (Mr. Nandalal Das and Mrs. Renuka Das) and Elder brother and sister (Mr. Badal Ch. Das and Ms. Sampa Das).

Dated: 02-11-2017

Shibu Das)