

ACKNOWLEDGEMENT

First, I thank god for everything.

As such, many people have extended their invaluable help and support to accomplish this research work. With immense pleasure I take this opportunity to sincerely thank all of them.

First of all I would like to express my earnest thanks to Professor Jyoti Prakash Tamang, my teacher, my mentor and my research supervisor who encouraged and inspired me into this field. His excellent guidance and great ideas has immensely enriched this work. Besides, he constantly motivated me throughout my research period without which I would not have been able to complete this manuscript by this time. His firm gesticulation of affirmation strongly inculcated in me the confidence and determination. Words will never be sufficient to express my respect and gratitude to him. In fact, I am indebted towards him.

I am very much thankful to Dr. M. P Kharel, Principal Sikkim Government College, Tadong for his unconditional support and very convincing encouragements.

I express my gratitude to Prof. Prabir Kumar Sarkar, Prof. Abhaya Prasad Das, Prof. Bishwanath Chakraborty, Prof. (Mrs.) Usha Chakraborty, all my well-regarded teachers, of the Department of Botany, University of North Bengal for all their help, support, inspiration and blessings. I thank all of them for giving me invaluable education during my post graduation. I am very much thankful to Associate Prof. Subash Chandra Roy for his unconditional support and

concern. I thank Associate Prof. Anirudha Shah, Associate Prof. Arnab Sen and Associate Prof. Polash Mondal of the Department of Botany, NBU, for their kind support and encouragements.

I sincerely thank the Head of the Department of Botany, University of North Bengal for extending me all the necessary facilities, support and guidance as and when required. I also express my sincere thanks to all the non teaching staffs and Research Scholars of the Department of Botany, NBU, for their kind support and encouragement. My special thanks to Mr. Kiran Sunar, Senior Research Fellow, Immuno-Pathology Laboratory, NBU and Mr. Saurav Moktan, Senior Research Fellow, Taxonomy and Environmental Biology Laboratory, NBU, for their kind help and encouragement.

I am very much thankful to the Registrar and the staff of the Registrar's office, University of North Bengal, for extending me their kind support and instantaneous help.

I have my most special thanks to Dr. Arun Kumar Rai, Asst. Professor, Department of Botany, Sikkim Government College, Tadong, for being with me all through the hard, yet, interesting times of my research work and helping me across the day and night in working out my experiments. I have my sincere thanks towards Dr. Buddhiman Tamang, Asst. Professor, Department of Microbiology, Sikkim University, for his kind support and help in working out the experiments on estimation of antioxidant and minerals. I am thankful to Dr. S. Manivannan, Associate Professor and Head of the Department, Department of Floriculture and Horticulture, Sikkim University, for his unconditional and invaluable help in working out

experiments on vitamins and minerals. I thank all the laboratory staffs, Department of Horticulture, Sikkim University for their kind help and support. I express my special thanks to Mrs. Pramila Sharma, Department of Microbiology, Sikkim University for her all time support and help in working out experiments on antioxidant and phenolic content. I extend my sincere thanks to Dr. Arun Chettri, Assistant Professor, Department of Plantation and Mangement, Sikkim University for his kind help and support. I would like to express my sincere gratitude to Dr. Mrs. Namrata Thapa, Associate Professor, Sikkim Government College, Tadong, for her constant help and encouragement.

I express my gratitude to Head of the Department of Botany and all my colleagues for their encouragement and support in my research work. I am thankful to Ms. Nikki Kharel, Asst. Professor, Department of Botany, for her kind help and support. I am very much thankful to Mr. Santosh Subba, Laboratory Instructor, Department of Botany Sikkim Government College, Tadong for his constant help and concern. I have my very special thanks to Mr. Arjun Sharma and Mrs. Kaushila Gurung of Sikkim Government College, Tadong for bearing with me and managing the office, during the course of my research work. I thank Dr. Bhasker Chakraborty, Associate Professor, Department of Chemistry, Sikkim Government College, Tadong and Mr. Govind Luitel, Research Scholar, Research Lab, Chemistry Department, Sikkim Government College, Tadong for their help and support. I am very much thankful to Dr. Kanad Das, Scientist "C", Botanical Survey of India, Sikkim Himalayan Circle, Mr.

Sundar Rai and Mr Subash Pradhan, Botanical Survey of India, Sikkim Himalayan Circle, for their kind help and support. I thank all the vegetable vendors whom I have encountered with, for, bearing with me during the course of my survey, working out on the questionnaire and collection of data. I thank all the village elders, foragers and informants who have lent their patient hearing to my queries and helped me work out on my area of research.

I sincerely thank Shri. Dinesh Sharma, Under Secretary cum D.D.O Sikkim Government College, Tadong. I express my earnest thanks to Mr. Chanchal Das, for his help and encouragement. I extend my sincere gratitude to Mr. Tamding, O.S, HRDD, Government of Sikkim, I show my sincere thanks to all the Teaching , Non- teaching staffs , Student representative council and the informant students of Sikkim Government College, Tadong, who have directly and indirectly supported me during my research work.

I express my genuine gratitude towards my parents Late. Shri. Nanda Prasad Pradhan and Late Smt. Budhha Laximi Pradhan for their blessings and everything that made a dignified life and living, possible for me. I express my sincere thanks to all my family members at Pakyong and Chandmari, Gangtok for their valuable advice, encouragement and support. I extend my special thanks to my brother Mr. Badri Kr. Pradhan for his kind help and support.

Finally, I express my deep sense of gratitude to my wife Mrs. Bindhya Pradhan who was beside me at all time for making things go right even when it was not going right. I thank her for bearing with me during the course of my research work. Her constant support and

encouragement inculcated a sense of self confidence in me, this thesis is in fact the embodiment of it. I thank my two little children Ms. Vedshara Pradhan and Master Hrig Vedant Pradhan for bearing with me during the hard times and critical hours of my research work. I thank them for their constant help, support and tolerance.

Date: 25th July 2013



Sudhan Pradhan