ACKNOWLEDGEMENTS

A sense of elation and accomplishment is always there when one finds a formidable task completed. The aphorism has been amply substantiated in this present work.

With immense servility I would like to thank God, the almighty to have bestowed me with good health, courage, inspiration, zeal and the light. He has kindled in me which has led the path to complete my work. But all this would not have been possible without the support and guidance of my elders.

Research involves consistent and dedicated mind regarding the strenuous and hard labour put into it. Here, it is a combined sense of pride and great privilege for me to get this golden opportunity to expressing my unfathomable gratitude and profound regards to my able supervisor Dr. V.K. Singhal, Professor, Department of Botany, Punjabi University, Patiala for his research acumen, regarding spirit, intellectual pursuit and critical assessment, useful suggestion and untiring willingness throughout the entire course of work, without which it would not have been possible to bring the work into its present form. To work under his supervision has not only been a great education but also a privilege for me.

I am profoundly grateful to Prof. R. C. Gupta, Head, Department of Botany, Punjabi University, Patiala for his cooperation, encouraging attitude and for providing the laboratory facilities and help from time to time.

I am extremely thankful to Prof. Santosh Kumari former head of the Department of Botany, Punjabi University, Patiala for her valuable suggestions which helped me at every stage for improving and enriching the work. I cannot forget to say thanks to my respected teachers of the department for their constant support and encouragement throughout this work.

My loyal and venerable thanks are due to Prof. M. Sharma for his timely help and cooperation in identification of plants. I am also thankful to Directors, Botanical Survey of India (BSI), Northern Circle Dehra Dun and Forest Research Institute, Dehra Dun for providing herbarium facilities.

I am equally thankful to Prof. M.K. Sidhu for her inspiring words which encouraged me at every stage for enriching the work.
With grace and great pleasure, I cannot express my feelings in words for my adorable friends (Mandeep, Adarsh, Garry, Bablu, Abhishek, Harjinder, Sandeep, Harpreet, Sapan, Jeevesh and Sanjay) and their untiring efforts and support during the crucial stages of work. I heartly acknowledge the helping nature of them, who never showed me back in the hour of need.

Words fail to express my feelings to Pawan Kumar Rana who provided decisive and energetic support during the crucial stage of work.

I also appreciate the cooperation extended to my labmates (Jaspreet, Dalbir, Sukhjinder, Subhpreet and Raman) for their timely help.

I will fail in my duty if I don’t thanks to library staff and non-teaching staff of the Botany Department for extending time to time help during this work.

I gratefully acknowledge the generous financial support from the Council of Scientific and Industrial Research (CSIR), New Delhi in the form of Senior Research Fellowship (SRF).

I am forever indebted to my parents, my brothers for their understanding, endless patience and encouragement when it was most required.

I owe my deepest gratitude to my in-laws for their sincere wishes, love, affection and motivation during my work.

And most of all for my loving, supportive, encouraging, and patient wife (Dr. Namita) whose faithful support during the final stages of this Ph.D. is so appreciated.

Sun computer centre, Patiala deserves special thanks for typing this thesis with precision, patience, utmost dedication and well-in-time in lucid manner.

Lastly, I offer my regards and blessing to all of those who supported me in any respect during the completion of thesis.

Thank you all for your help, insights, guidance and support.

Puneet Kumar