Acknowledgement

First of all, I submit my thesis at the feet of Almighty. I thank Almighty with whose mercy; it has been made possible for me to reach this so far. Today with humility, bowed head, misty eyes, and folded hands when, I am thanking Almighty in these blissful moments, I am incapable of expressing my innermost into words.

Research is an arduous task, which despite of consistent and dedicated mind with regards to strenuous and hard labor also requires patience with the benediction and grace of Almighty.

I convey my sagacious sense of gratitude and admiration toward my esteemed venerable supervisor Dr. S.K. Chatterjee Principal Govt. College, Tilda, Raipur. His inspiring and priceless guidance and his enthusiasm and never ending drive for work, was a constant source of inspiration for me. He has been an esteemed guide and moving spirit behind this uphill task.

I owe my thanks to my co-supervisor Dr. V.K. Kanungo Assistant Professor Department of Botany Govt. N.P.G. college of Science, Raipur, for giving me his valuable ever-available guidance throughout the course of study. Without his able guidance and painstaking efforts and encouragement, the work wouldn’t have been what it is. I am truly grateful to him for extending his total co-operation and understanding when things were not too smooth.

My gratitude is due to Mrs. Chatterjee who has always encouraged me to pave a smooth path and provided me emotional support, when I was far from my family members. I owe them my heartfelt appreciation.

I wish to express my heartiest thanks to vice chancellor, Dr.S.K. Pandey and ex. Dean Dr. B.K. Sharma for providing financial assistance during course of study by giving doctoral research scholarship of Ravishankar Shukla University, Raipur (CG) to accomplish this endeavour successfully.

I extend my deepest regard to Prof. Rama Pandey, Dr. K.K. Gosh, Prof. and head and other Faculty members of SOS in chemistry Pt. Ravi Shankar University Raipur C.G. for their support, guidance and helpful suggestions. I feel pleasure in acknowledging Dr. K. S. Patel, Professor, School of Studies in Chemistry, Pt. Ravishankar Shukla University, Raipur (CG), who very generously extended me his
expertise advice, valuable discussion, constant criticism of the work, He is an unforgettable name of my academic career.

I would like to express my sincere thanks to Dr. K.N. Bapat ex. Principal, Dr. Shilja Nigam ex.HOD, Dr. Kalpana Sharma, HOD and all the Faculty members of Department of Chemistry, Govt. N.P.G. college of Science for providing necessary laboratory amenities, library and course work facility, their guidance, and support.

I am also sincerely thankful to Dr. R. Diwan, Dr. Sangeeta Bajpai, Mr. A.K. Sharma, Dr. N.B. Singh, Dr. S. Patra, for their consistent support and encouragement.

My thanks are also due to the Prof. Dr. R. S. Khamparia Dean and Dr. A.K.Rawat HOD, Dept. of Soil Science and Agricultural Chemistry JNKVV Jabalpur for providing laboratory facilities chemical analysis of soil, dust and plant samples and also library facility for literature survey. They also provided insightful discussions about the research.

I also extended my sincere gratitude to Dr. Sanjay Dwivedi Scientist, Dept. of Agronomy and Dr. Alok Tiwari Dept. of soil science and Agricultural Chemistry, Indra Gandhi Agricultural University, Raipur, C.G. for providing meteorological data and their guidance for plant pigment testing.

I am very thank full to Dr. Rashmi Goyal HOD Chemistry, Govt. P.G. College Damoh and Dr. Kiran Dubey HOD Chemistry, Govt. K.N. College Damoh for providing library facility and guidance, and motivation at various stages of investigation.

I am indeed thank full to Dr. S.K. Upadhyay Regional Officer, Mrs. Anita Yadav Junior Scientist, Mrs Sujata Shukla Junior Scientist and Mr. Gourish, Pollution control board Raipur, for providing necessary equipments and analytical facility for air sampling and analysis.

I am thankful to Dr. B.K. Pathak ex. Director DRDO Delhi for providing geographical information and guidance at various stages of my research work.

I offer my special thanks to Mr. Raman Sharma Regional Head Aditya birla group and Mr. Hamant Kasyap officer Aditya birla group for allowing industrial visit, valuable guidance and their constant help during the tenure of this project.

I am particularly grateful to technical and laboratory staff Mr. Baghel, Mr. Dhruv, Mr. Sunil and laboratory staff of govt. N.P.G. College of Science and Dr. G.D.Sharma, Dr. Rishikash Thakur Senior research fellow and Shri Vhikam Prasad technician of Dept. of soil science and agricultural Chemistry JNKVV Jabalpur.
I am equally thankful to Librarian and all the non-teaching staff of Pt. Ravishankar Shukla University, Raipur (CG), for extending help and co-operation in laboratory work.

Some colleagues are never too busy to give us a hand whenever they are needed. I appreciate the unwavering and cheerful companionship of my true colleagues Mrs Gitanjli, Mrs Smita, Mr Piyush, Miss Sandhya, Miss Sonal, Mrs Vandana and Miss Swati who lend their helping hand whenever I needed.

Last but not least, I find no words to express my abiding gratitude to Poojya babooji Shri L.P.Dubey, my mother-in law Smt. Kusum Pathak, father-in-law Shri R.K.Pathak, my mother Smt. Shashi and father Shri Ravi Shanker Khamparia who soulfully provided me their constant support and the right impetus to undertake the challenge of this proportion, like all other spheres of life, for what I cannot measure but treasure. I express my sincere love and affection towards my husband Mr. Ashish Pathak and my cute loving daughter Akshita Pathak. They believed in me before I believed in myself. When my morals ebbed and enthusiasm waned, it was my parents who helped me getting out of it, a feat that can never be paid back in feelings or words. To them I owe my wonderful today and dream filled future.

At last but not least, I acknowledge all those who knowingly and unknowingly contributed in making my work easier and a real success.

Ankita Pathak