Acknowledgements

I have been accompanied and supported by many people. It is a pleasant task that now I have the opportunity to express my gratitude for all of you. Though it is an impossible task, given the many people that have helped to design, implement, apply, criticize and sponsor the work, I am going to try, and if your name is not listed, rest assured that my gratitude is not less than for those listed.

Firstly it is a pleasure to express my deep sense of gratitude to Dr. Vidya Gupta, for her valuable guidance, suggestion and unfailing support throughout the study. I especially appreciate the freedom she has given me in carrying out the work. Her ever-dynamic personality and energetic nature were an inspiration for a scientific career. I owe her lots of gratitude for having me shown this way of research. Her patience with me to allow me to pursue my other academic interests along with the main PhD work in the lab was of great help and is greatly acknowledged.

Thank you Dr. Abhay, for keeping an eye on the progress of my work, your constant encouragement and enthusiastic discussions, always have charged me up. Dr. Ashok has been very encouraging and always was available when I needed his advice, thanking you for the selfless helps and suggestions. The progress of this research project has been positively gained due to valuable and critical inputs from Dr. Mohini Sainani. I thank Dr. Naren for making the thesis aesthetically presentable. Many thanks to Dr. Meena Lagu, for minutely monitoring the scientific requirements of the group apart from her research. My gratitude towards Dr. Jamadagni, Mahatma Phule Agricultural University, Rahuri and Dr. Fred Muehelbauer, Washington State University, Pullman, USA, for the seed materials.

I would like to thank the Director, National Chemical Laboratory for providing all the facilities for my research. I also acknowledge financial grants from the CSIR, New Delhi in the form of Research Fellowships during the tenure of my work.

At NCL, lab wouldn’t have felt like a second home without having a bunch of wonderful labmates. I enjoyed the company of seniors, Rajesh, Shashi, KN Rao, as also Aditi C., Ashwini H., Ashwini R., Charu, Elan, Gauri B., Gayatri, Hemangi, Krishna, Sanjay, Manasi, Mona, Neeta, Pankaj, Pavan, Prashant H., Prashant P., Radhika, Rahul, Ram, Ramya, Rashmi, Richa, Sagar, Savita, Sofia, Supriya, Tejas, Vaiju, Varsha, and of course, Ajit and Jagtap. Neighbors in the department need a special mention, Atul, Shashidhar, Nagaraj, Santosh for their ever readiness to help.

My friends have always stood by my side through low patches and good times alike. Ajay, Bhushan, Reddy thank you for sharing the room and reminding me that life very much exists outside the confines of science, while Amrita, Kapiya, Balya, Maniya, you have never failed to raise the spirits with the morale-boosters. Cheers to you! for all the gyan, science-wise and otherwise. Manje thanks for your unstinting support during my work.
Thank you Sujata for the much needed tea & munchies during the writing of the thesis and Unmani, my baby friend, is a reason enough to smile.

Though being away from me throughout my research tenure, my wife Shilpa's support and trust have guided me through this phase in life and I would have been lost so many times without her. I realize how fortunate I am for you brought joy, a sense of perspective and a sense of possibility to the future and assured me that one day I would finish. I express my deepest gratitude to my parents-in-law for the care, support and encouragement. Sharan, Channa aunt, Vidy and Tharak, thank you for being there for me.

I am greatly indebted to my family for their unending love, support and sacrifice. I am at loss of words to describe the love showered on me by Akka, Daji, Sudhir Daji, Sudhir and swaroop. Aai & Baba thank you for the enormous faith and patience with me, you have done all you could and more to get me to this point, what more could I have asked for . . . .!

Most of all I dedicate my small achievement to Aai & Baba who have come through such a long and arduous journey.

Suhas Nimbalkar