ACKNOWLEDGMENT

The tenure of human in this world is supported by many others. Acknowledgement for a few might be just a trifle thing written on a piece of paper. Nevertheless, in the true essence, it gives us an opportunity to remember and express our feelings to those, whom we love, revere and share our secrets. Here I get a great chance to express my token of thanks to people who in a way helped and supported me to complete this record.

I would like to give my first thanks to **ALMIGHTY God** and my **PARENTS**, as without their mercy, accomplishment of my work and preparation of this manuscript would have not been possible.

Words are ineffable to express my profound gratitude and sincere regards to my esteemed advisor **Prof. (Dr.) Neeraj**, Dean, Sundresan School of Animal Husbandry and Dairying for his constant versatile inspiring guidance, constructive suggestions, constant support throughout the course of this study and preparation of manuscript. It was my proud privilege to associate with him.

I feel happy to express my sincere gratitude to my co-advisor **Prof. (Dr.) Sushil Prasad**, Department of Livestock Production and Management, Ranchi Veterinary College, Ranchi for providing facilities for research work and moral support during the entire period of study.

I express my appreciation to **Dr. S.K. Singh, Ex-Dean**, Ranchi Veterinary College Ranchi for rendering excellent council and co-operation whenever required.

I am grateful to **Dr. Jagdish Prasad (Ex-dean, SSAH&D), Dr. Sarveet Herbert (Ex-dean, SSAH&D), Dr. Ramesh Pandey, Dr. P. Kumar, Dr. Rampal Singh, and Mr. J. Pareira** for valuable suggestions and providing necessary help in each step during my research work.

I am grateful to **Dr. Sushma** (Asst. Prof., Department of Biochemistry), for her magnanimous efforts in helping me at course and research work.

Sincere thanks to other faculty members for their utmost cooperation and immense help during the course of my study. I am heartily thankful to the non teaching staffs **Mr. Rajesh Mishra (Lab. Assitt), Mr. Prem, Mr. Manish and Mr. Sita.**
Words would not suffice to express my deep sense of pride and pleasure to all my friends Mr. Deepak K. Bhadouria, Dr. Ajeet Kumar Singh, Dr. Pranab Doley, and my juniors Gaurav Jain, Yogendra Kumar, Sobhit, Harshal, Sushil, Dhananjay for immense help during the entire period of academic and research.

I extremely grateful to Prof.(Dr.) Vinod B. Lal Director Administration Sam Higginbottom Institute of Agriculture, Technology & Sciences Allahabad, for his moral support during the course of study.

I am thankful to Dean Post Graduate Studies, Prof.(Dr.) P. W. Ramteke and Prof.(Dr.) Neeraj Dean Faculty of Animal Husbandry and Dairying of providing facilities.

I fail to enough words to express my deep sense of regard to my Parents, my brother, Bhabhi and nephew Anjali for their immense love, moral support, invariant encouragement and lesson of hard work, which brought me up to this stage.

My Ph.D. tenure would never have been completed without the love and support of my most affectionate loveable son, Master Ayush who have walked on this research path since from the age of three and half years, my eyes are wet, no words to express his sacrifice. Of course behind all of this I avail this opportunities to express my heartfelt thanks to my wife Smita Rani, for her love and support and of course her sacrifice that prevodes everything, who made my dream comes true.

Last but above all, I am grateful to Almighty God, who has given me courage, patience and motivation to complete this study.

Date: 15/04/2014

Place: Allahabad

(Bharat Mahto)

Author