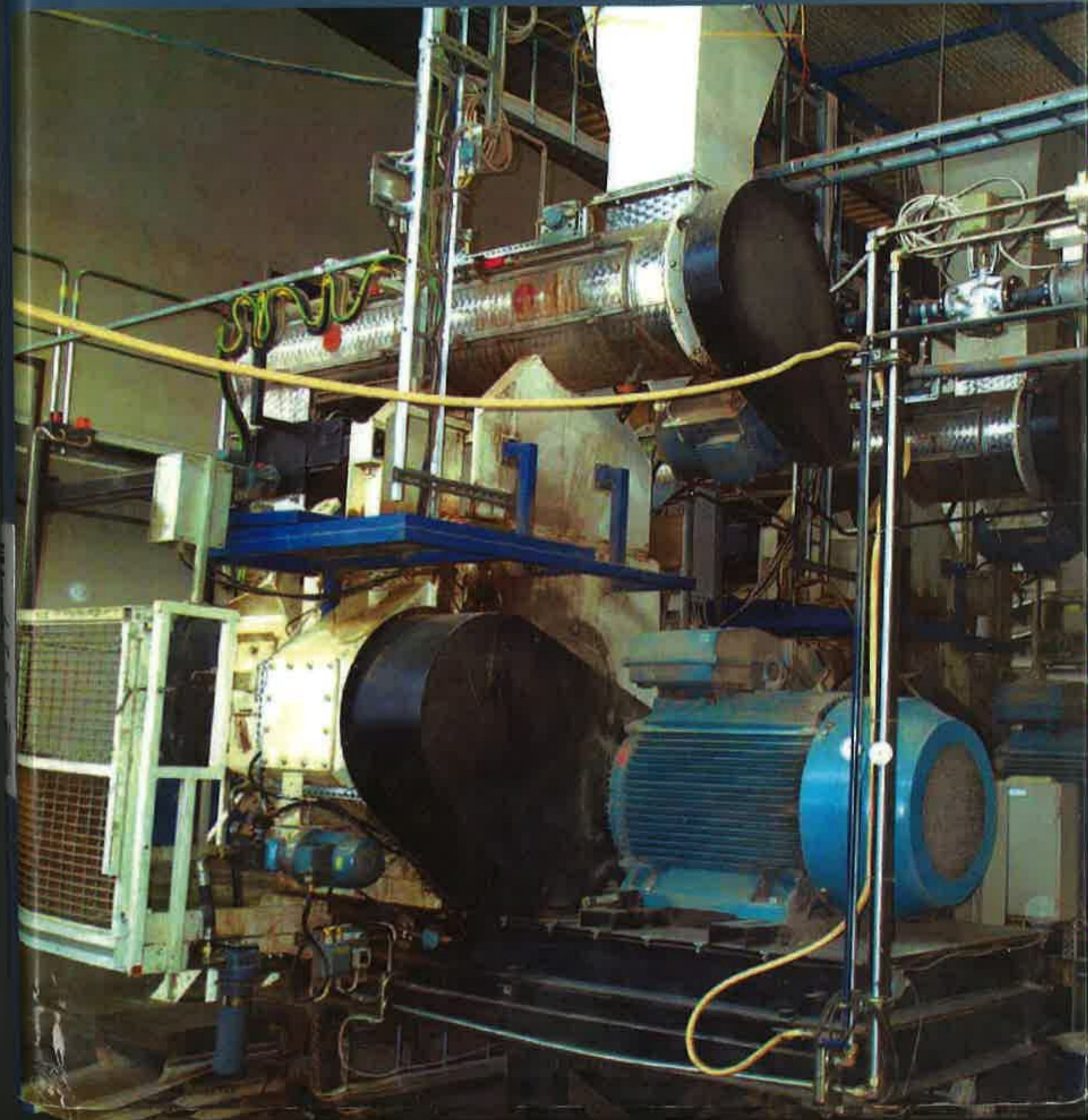


# ANIMAL FEED TECHNOLOGY

**Editors :**

**Dr. S.S. Kundu, Dr. S.K. Mahanta,  
Dr. Sultan Singh, Dr. P.S. Pathak**



About the

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Dr. S.S. Ku

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## PREFACE

Both livestock and human population have attained an increasing streak in the post independent era of the country. India has registered a marked growth in the development and diversification of industrial sector. Livestock rearing has undergone a metamorphosis that has put the India on the top position in the milk production. To cater the need of increasing population for animal origin food, sustainability coupled with higher livestock production is of paramount importance. There are several obstacles in maintaining the pace of livestock production to match the increasing demand of food of livestock origin, but supply of feed and fodders and poor genetic makeup are the most critical. The present supply of compound feed from feed manufacturing sector is only 10 million tones. There is ample scope to boost the animal feed manufacturing industries that needs a cohesive interaction and coordination among the researchers, engineers, policy makers and feed manufacturers. The editors of the book "Animal Feed Technology" have made an attempt to organize and synthesize the information contributed by engineers, nutritionists, feed manufacturers in their respective areas of expertise. Subject matter of the book comprises of cereal processing, pelleting, protected nutrients technology, probiotics, feed resources, feed quality standards, gelatinization, extrusion technology, anti-quality factors in feeds, liquid feed handling, feed microscopy, feed purchase procedures, codex alimentarius, agro-industrial byproducts, processing techniques etc. Thus the compiled information in the book will provide the complete scenario of the Indian feed industry specially in terms of present scientific know how on machinery, processing techniques, compound feed quality, feed supplementation and future thrusts of animal feed science and technology aspects. The editors extend special thanks to contributors for their contribution in form of different chapters.

The encouragement and blessings poured by honorable Director General, ICAR and Secretary DARE, Dr. Mangala Rai ji; Dr. G. Kalloo, Deputy Director General (Crop Sciences); Dr. V. K Taneja, Deputy Director General (Animal Sciences) and Dr. S. N. Shukla, ADG are gratefully recorded. It's pleasure in extending thanks to Department of Science and Technology and especially to Dr. V. P. S. Tomar and Dr. J. K. Sharma advisors for their financial support to enable us to arrange this workshop to discuss different aspects of the subject. It is our duty to thank the advisors namely Dr. K Pradhan, Dr. S. K. Ranjhan, Dr. V. K. Singh, Dr. V. D. Mudgal Dr. S. M. Ilyas, Dr. N. N. Patahak for their advice in finalizing the contents of the book.

It is pleasure in extending the thanks to our colleagues namely Dr. N. C. verma, Dr. B. K. Bhadoria, Dr. A. B. Majumdar, Dr. L. K. Karnani, Dr. B. P. Kushwaha, Dr. A. K. Mishra, Dr. S. B. Maity, Dr. N. P. Singh, Dr. K. K. Singh, Dr. A. K. Samanta, Dr. M. M. Das, Dr. G. H. Pailan, Dr. S. K. Nag and students/staff especially Dr. Ranjan Kumar, Chanderbhan and Sudheer for their help at different stages in preparing the book.

S. S. Kundu  
S. K. Mahanta  
Sultan Singh  
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**Dr. Sultan Singh** is a Scientist (Animal Nutrition) in PAR at IGFR, Jhansi (UP). His main areas of research in last 12 years are rumen metabolism and microbiology and evaluation of feeds and fodders. Transinoculation a mean of rumen manipulation and standardization of technique for in vitro dry matter digestion are accredited to his accomplishments. Recipient of two awards viz. ICAR Team Award (1994-96), for outstanding research in Agriculture and allied sciences and ICAR Young Scientist Award (1997-98) for his outstanding contribution in field of Animal Nutrition. He has over 50 research papers published in National and International journals and 3 Technical bulletins to his credit.



**Dr. P.S. Pathak** after studies at Banaras Hindu University, Varanasi, started his career as a lecture and has 36 years of research experience in the field of Agroforestry, Agrosilvopastoral systems, Silvopastoral systems, Growth and production modeling of trees, Wasteland reclamation and development, Range management. He served as Assistant Director General (Agro forestry), ICAR, New Delhi from 1996-2000. Dr. Pathak coordinated the TPN-2 network project on agroforestry and soil conservation of CCD of the United Nations where 5 institutes of ICAR were involved.

He was associated with the development of an IDRC, Canada supported project proposal on Silvopastoral Systems of Production for Development of Degraded lands in Bundelkhand region. He is President RMSI and Portfolio Holder of a number of scientific societies and fellow of National Institute of Ecology and National Academy of Agricultural Sciences. Dr. Pathak visited 16 countries for attending international meetings, workshops and field trips related to Agroforestry, Multipurpose Trees and Shrubs (MPTS) development, Grassland management, Development oriented research in agricultural and development of degraded lands.

He is recipient of ICAR Team Research Award for outstanding research in the area of agricultural sciences (Natural Resource Management) in the year 2002. He has almost 265 research publications including 16 books (edited) and 2 books authored to his credit. Currently, as Director of Indian Grassland & Fodder Research Institute (IGFR), Jhansi. He is guiding and managing research in the area of forage production and its utilization in the country since July 2000.

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