

BOOK REVIEW

Animal Nutrition and Reproductive Physiology. K.T. Sampath, Jyotirmoy Ghosh and Raghavendra Bhatta (Eds) 2013. Pp. 729. Satish Serial Publishing House, 403, Express Tower, Commercial Complex, Azadpur, Delhi – 110033 (India).

Animal production systems occupy an important position in food production all over the world. Foods of animal origin constitute a significant part of the human diet. The systems of production range from small and marginal scale livelihood options to highly organized commercial ventures. In a country like India, animal production is by and large a component of farming system in which crop production plays a major role. In many developed countries, animal husbandry is highly specialized, intensified, commercial, mechanized and automated. Such production systems are gradually emerging in our country too in view of the transition taking place in the food front from primitive, unorganized, scattered, low input-based, secondary or subsidiary to better organized, science and technology based, high-input oriented and entrepreneurial. Scientific and technological advancement on one hand and market demands determining the quality and quantity criteria on the other have played a major role in such transition.

However, the problems faced by the animal sector are manifold. Inadequate feed supply, infertility, poor housing, climatic stress and non-availability of superior germplasm for high production are among the major hurdles to efficient, profitable and sustainable production. In a drastically changing scenario as emerging in our country, there has been a long felt need to compile information and ways and means to successfully encounter these problems. This book under review is a monumental effort in this direction. The book is inevitably an edited compilation authored by scientists and technocrats well accomplished in respective disciplines and fields of specialization. The format of the book is chiefly laid to analyse and provide fundamental and applied information on two major aspects of animal production systems: Animal Nutrition and Reproductive Physiology.

The book has been divided into five sections and in all 36 chapters sequentially providing classified information on feeding and nutrition and assisted reproduction. Emerging technologies in these fields, environmental interactions and impact and food safety including quality control have also been dealt with in separate sections. The first section is on advanced technologies in livestock production and nutrition wherein subject matters on fibre digestibility, mineral nutrition, genetic manipulation of rumen ecosystem for improved utilization of crop residues, bypass nutrient technology and significance of polyunsaturated fatty acid enriched feed supplementation have been delineated. Detailed information is also provided on designer animal products and employment of pre- and pro-biotics in animal feeding. New innovations for enhancing egg production and emerging trends in poultry nutrition have been discussed under separate chapters. Under the section on advances in assisted reproduction, basic information on follicular development in ruminants and its modulation have been provided followed by practical applications such as laboratory production of bovine embryos and cryo-preservation of oocytes and embryos. Potential of prenatal follicle technology for enhancing *in vitro* embryo production has been outlined at length. Embryo-uterine interaction and indicators of pregnancy establishment are recounted along with the process of implantation and various applications in respect of assisted reproductive technologies. Oxygen stress and antioxidant mechanisms in the uterine environment have been described. Advances in prediction of semen quality and fertility in ruminants have been documented and the role of paternal transcripts on sperm function and fertility

has been dealt with adequately. Latest developments regarding sexing of sperms and embryos of farm animals have been outlined with their practical implications and challenges.

All body processes relating to nutrition are basically physiological in nature and convergence of nutrition and physiology at micro levels have been vividly explained in a separate section. Under this, aspects relating to stem cell technologies, characterization of microbial signatures and applications of bio-informatics tools for delineating structures and functions of proteins have been outlined. Nano-biotechnological applications in the field of animal nutrition and use of nano-minerals in the livestock industry have been discussed in detail. The concept of meta-analysis for analysing research results has been put into proper perspective. Estimation of crop residue and biomass production from grasslands and farmlands by applying remote sensing techniques is a new approach and an example of modern technology ensuring precision and reliability. While estimates of nutrient requirements and feed availability are quite varied, more refined methods of their assessment have been brought to light. Ultimately science needs to be translated into technology development and the proven technologies need to be transferred to the field for successful application. The concluding chapter of this section deals with strategies on technology transfer.

Livestock-environment interactions and their mutual influence and impact on climate and ecosystem have been burning issues engaging the minds of scientists and researchers from different perspectives. The section on environment-livestock interactions particularly deals with methane emission, methane mitigation and climate change on account of livestock, particularly the ruminants. Recent developments in abiotic stress in livestock production systems also have been provided.

The final section deals with feed safety and quality control wherein recent advances in mycotoxin research in poultry and amelioration of anti-nutritional factors in livestock feeds have been provided. Xenobiotics in animal nutrition find mention under a separate chapter. Feed quality, safety and regulations have been outlined. There is a separate chapter emphasizing the importance the problem of fluorosis in which the mode of action and methods of amelioration have been described.

The chapters contain summaries of contents and exhaustive references for further reading. A subject index given at the end is a useful feature to locate specific aspects to be referred. The book is hardbound with an elegant jacket cover. The contributors need to be congratulated for their untiring efforts in bringing together the latest information under each aspect of this elaborate subject matter and the Editors have rendered full justice to the final compilation of this monumental work. Not the least, the publishers deserve all praise for bringing out this voluminous work with great deal of care and commitment. This publication cannot remain as a one time effort, but needs constant revision and updation since the canvass covered under it is vast and ever expanding. This publication needs to be made available in libraries of all educational and research institutions for ready access by students, scholars, researchers and scientists, and of course, will be of immense interest to the general reader interested in the subject matter as well.

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