

Preface

This book is a valuable compilation of topics, ranging from the basic to the most complex theories and principles in the field of animal genetics and breeding. It explores all the important aspects of animal genetics and breeding in the present day scenario. Animal genetics studies selected breeding of livestock through genetic intervention with the purpose of increasing genetic value. The book also talks about the basic principles of breeding, giving details about animal breeding, husbandry and breeding in the wild. Such selected concepts that redefine this field have been presented in this text. For all those who are interested in animal genetics and breeding, this textbook can prove to be an essential guide.

A short introduction to every chapter is written below to provide an overview of the content of the book:

Chapter 1 - Genetics is the study of genes and of inheritance. Genetics is an emerging field of study; the following chapter will not only provide an overview, it will also delve deep into the variegated topics related to it. This chapter is an introductory chapter, which will introduce briefly all the significant aspects of animal breeding and genetics; **Chapter 2** - The chapter closely examines the key concepts of genetics to provide an extensive understanding of the subject. Some of the key concepts discussed in this chapter are chromosomes, genetic diversity, mutation, DNA and RNA. A chromosome is a structure that contains the DNA of a living organism whereas genetic diversity is the sum of all the genetic characteristics in the genetic nature of an organism. The text strategically encompasses and incorporates the major key concepts of genetics, providing a complete understanding; **Chapter 3** - Breeding is the function of reproduction and is concerned with particularly animals and plants. Some of the aspects of breeding discussed are captive breeding, seasonal breeder, breeding pair, inbreeding, outcrossing, backcrossing and culling. This section is an overview of the subject matter incorporating all the major aspects of breeding; **Chapter 4** - A gene is the functional unit of heredity. It is very important to understand gene nomenclature, gene expression, essential gene and heredity, to have a profound understanding of genes. This chapter has been carefully written to provide an easy understanding of the varied facets of genes; **Chapter 5** - The process of reproducing by means other than sexual intercourse is referred to as artificial insemination. It's a deliberate introduction of sperm into the female's uterus. As compared to the natural way of reproducing, artificial insemination is expensive and involves professional help. The application of artificial insemination in the current scenario has been thoroughly discussed in this chapter.

Finally, I would like to thank my fellow scholars who gave constructive feedback and my family members who supported me at every step.

Editor