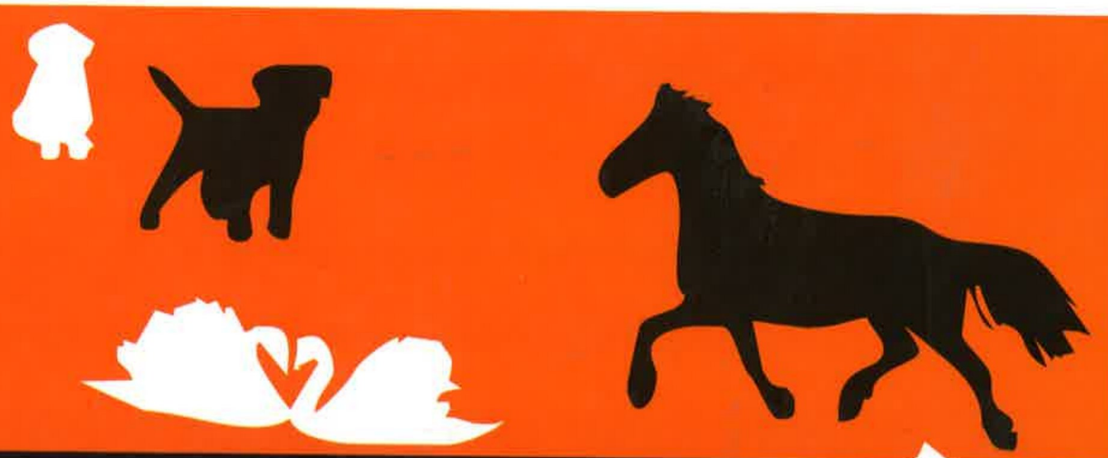
ANIMAL NUTRITION

ADVANCES & DEVELOPMENTS



Usha Rani Mehra Putan Singh A.K. Verma

47. **P.S. Banerjee,** Senior Scientist, Veterinary Parasitology, Indian Veterinary Research Institute, Izatnagar-243 122 (U.P.), India.

48. **Putan Singh,** Principal Scientist, Division of Animal Nutrition, Indian Veterinary Research Institute, Izatnagar-243 122 (U.P.), India.

49. **R.R. Shukla,** Former Prof., Vallabhbhai Patel Chest Institute, University of Delhi, Delhi, India.

50. **R.S. Dass,** Principal Scientist, Division of Animal Nutrition, Indian Veterinary Research Institute, Izatnagar-243 122 (U.P.), India.

51. **Raina Pathak,** College of Veterinary Science and Animal Husbandry, Anjora, Durg-491 001, India.

52. **S. Anandan,** Senior Scientist, Animal Nutrition, National Institute of Animal Nutrition and Physiology Adugodi, Bangalore-560 030, India.

53. **S. Nanda,** P.G. Scholar, College of Veterinary Science and Animal Husbandry Anjora, Durg-491 001.

54. **S. Swarnkar,** P.G. Scholar, College of Veterinary Science and Animal Husbandry Anjora, Durg-491 001.

55. **(Mrs.) Saroj Toppo,** Senior Scientist, ICAR Research Complex for NEH Region Sikkim Centre, Tadong, Gangtok-737 102, Sikkim, India.

56. **S.C. Gupta,** Principal Scientist, Veterinary Parasitology, Indian Veterinary Research Institute, Izatnagar-243 122 (U.P.), India.

57. **S.K. Mishra,** Ph.D, Scholar, Division of Dairy Microbiology, National Diary Research Insitute, Karnal, Haryana-132 001.

58. **S.K. Ranjhan,** Director, Hind Agro Industries Limited, Aligarh-202 122, India.

59. **S.K. Sirohi,** Senior Scientist, National Dairy Research Institute, Karnal-132 001, Haryana, India.

60. **S.P. Tiwari,** Professor and Head, Animal Nutrition, College of Veterinary Science and Animal Husbandry, Anjora, Durg-491 001, India

61. **S.V. Rama Rao,** Principal Scientist, Project Directorate on Poultry, Rajendranagar, Hyderabad-500 030 (A.P.), India.

62. **Tribhuwan Sharma,** Professor and Head Department of Animal Nutrition, Rajasthan Agriculture University Beechwal, Bikaner-334 402.

63. **U.K. Mishra,** Director of Instructions, IGKV, Raipur (C.G.).

64. **(Mrs.) Usha R. Mehra,** Scientist Emeritus, Division of Animal Nutrition, Indian Veterinary Research Institute, Izatnagar-243 122 (U.P.), India.

Contents

Animal Nutrition, 2012
eds. Dr. (Mrs.) Usha R. Mehra et al., pp. 1-28
Satish Serial Publishing House e-mail : info@satishserial.com; website : www.satishserial.com

Chapter 1

Concept and Application of Mixed Farming Systems in India

S.P. TIWARI, KIRAN KUMARI AND USHA R. MEHRA

The concepts associated with integrated farming systems (IFS) are practiced by numerous farmers throughout the globe. A common characteristic of these systems is that they invariably have a combination of crop and livestock enterprises and in some cases may include combinations of aquaculture and trees. The definition of IFS is varied and dependent on the context. Agbonlabor *et al.* (2003) defined the concept as a type of mixed farming system that combines crop and livestock enterprises in a supplementary and/or complementary manner. Okigbo (1995) defines these systems as a mixed farming system that consists of at least two separate but logically interdependent parts of a crop and livestock enterprises. Contrasting these definitions Radhammani *et al.* (2003) describes IFS's as a component of farming systems which takes into account the concepts of minimizing risk, increasing production and profits whilst improving the utilization of organic wastes and crop residues. Jayanthi *et al.* (2000) based on experiences from Tamil Nadu, India, described these systems as a mixed animal crop system where the animal component is often raised on agricultural waste products while the animal is used to cultivate the soil and provide manure to be used as

ANIMAL NUTRITION

ADVANCES & DEVELOPMENTS

The rapid changes in the scientific know how of the science of Animal Nutrition have taken place in last two decades. There is a much felt need for a text book of advanced animal nutrition for students from Asian and other developing countries. This book is written in a very simple illustrative and coherent manner with all updated information so that students, scientists/researchers and academicians, at national and international level will be benefitted.

This book is the result of a multi-author effort. The contributors were invited at national as well as international level for their expertise as topics and professional involvement.

This book attempts at providing a clear, thorough and up-dated information fundamentals to animal nutrition, as well as its application, each topic is discussed from a multidisciplinary angle to aid and assist understanding, and not merely as a routine to fulfill the requirement of syllabi. Many chapters are devoted to special topics in changing scenario of Animal Nutrition, some recent topics like global warming due to methane emission by livestock, environmental issues in livestock rearing and polices, quality assurance for livestock production and prospects of feed from genetically modified plants in livestock feeding *etc.* have been introduced. In editors opinion, this book will be extremely useful to all persons at national and international level who are directly involved with the science of Animal Nutrition.

SSPH

SATISH SERIAL PUBLISHING HOUSE

403, Express Tower, Commercial Complex, Azadpur, Delhi - 110033 (India)
Phone : 011-27672852, Fax : 91-11-27672046
E-mail : info@satishserial.com, hkjain1975@yahoo.com
Website : www.satishserial.com

ISBN 8189304-89-5

jacket design by : avichalmanas@gmail.com