SCIENTIFIC FARM ANIMAL PRODUCTION
AN INTRODUCTION TO ANIMAL SCIENCE
ELEVENTH EDITION

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This book is inspired by the men and women who make their living from the land and from applying not only the principles of science but the art of husbandry to their role as stewards of land, livestock, and communities. It is offered as a resource to the many students and teachers who daily invest their time, energy and talent into the process of improving animal agriculture in the hope that one day humanity might be free of hunger.

This work is dedicated to my wife Laura and our children Justin, Sean, Trae, Kate, and Coleman who have contributed their talent and support in its creation.
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Preface

Scientific Farm Animal Production is distinguished by an appropriate coverage of both breadth and depth of livestock and poultry production and their respective industries. The book gives an overview of the biological principles applicable to the animal sciences with chapters on reproduction, genetics, nutrition, lactation, consumer products, and other subjects. The book also covers the breeding, feeding, and management of beef cattle, dairy cattle, horses, sheep and goats, swine, and poultry. Although books have been written on each of these separate topics, the author has highlighted the significant biological principles, scientific relationships, and management practices in a condensed but informative manner.

TARGET AUDIENCE

This book is designed as a text for the introductory animal science course typically taught at universities and community colleges. It is also a valuable reference book for livestock producers, vocational agriculture instructors, and others desiring an overview of livestock production principles and management. The book is appropriate for the urban student with limited livestock experience, yet challenging for the student who has a livestock production background.

KEY FEATURES

Chapters 1 through 9 cover animal enterprises and products; Chapters 10 through 22 discuss the biological principles that are utilized to improve livestock and poultry production and the issues facing animal agriculture; while livestock and poultry management systems are presented in Chapters 23 through 34.

The glossary of terms used throughout the book has been expanded so that students can readily become familiar with animal science terminology. Many of the Key Terms in the text are included in the glossary. Additionally, key words are provided at the end of each chapter as an aid to student learning.

Photographs and figures are used throughout the book to communicate key points and major relationships. The visual aspects of the text should help students expand their global and macro view of the livestock industry as well as better understanding how theory is put into practice.

At the end of each chapter, a set of questions are provided that are designed to facilitate an in-depth understanding of the material. Students are encouraged to utilize the questions to assist them in making connections between concepts and to better integrate relationships to allow for not only listing the facts but creating a framework for the application of knowledge.

NEW TO THIS EDITION

• This text continues to blend the various disciplines of science with contemporary management practices and industry trends to build a cohesive discussion of animal agriculture. The following improvements have been made to this edition: The input of nearly 20 reviewers was utilized to assure accuracy, clarity, and effective delivery of material.
• Demographic, industry data, and consumer trends have been updated.
• Photos and illustrations have been upgraded to enhance the reader experience.
• Management chapters have been revised to reflect the most current protocols and technologies used by the industry.
• More attention has been given to the issues and challenges confronting the livestock and poultry industry.
• Significant revision has been accomplished to provide a comprehensive but more clear communication of science based principles and relationships.
• Financial and enterprise-based cost and return data has been integrated to facilitate better understanding of the economic consequences of management decisions.
• The text effectively balances science and practice as it applies to the livestock and poultry industry.

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Dr. Thomas G. Field serves as the director of the Engler Agribusiness Entrepreneurship Program and holder of the Engler Chair in Agribusiness Entrepreneurship at the University of Nebraska—Lincoln.

He is also a noted agricultural author and a frequent speaker at agricultural events in the United States and abroad. He has consulted with a number of agricultural enterprises and organizations, and has served on numerous boards related to education, agriculture, and athletics. He is the co-owner of Field Land and Cattle Company, LLC in Colorado.

Dr. Field was raised on a Colorado cow–calf and seedstock enterprise. He managed a seedstock herd of cattle after completing his B.S. degree. A competitive horseman as a youth, he has had practical experience with seedstock cattle, commercial cow–calf production, stockers, and horses. He has a B.S., M.S., and Ph.D. in animal science from Colorado State University.

Dr. Field has received teaching awards from the USDA National Excellence in Teaching program, the National Association of Colleges and Teachers of Agriculture, the American Society of Animal Sciences, Colorado State University, and the University of Nebraska.

He is married to Laura and father to Justin, Sean, Trae, Kate, and Coleman.