Forage Quality, Evaluation, and Utilization

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Based on the National Conference on Forage Quality, Evaluation, and Utilization held at the University of Nebraska, Lincoln, on 13-15 April 1994

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CONTENTS

PREFACE vii
CONTRIBUTORS ix

SECTION I. OVERVIEW OF FORAGE SCIENCE

1 Milestones in Forage Research (1969-1994)
R. L. Reid 1

2 The Impact of Forage Quality and Supplementation Regimen on Ruminant Animal Intake and Performance
J. A. Paterson, R. L. Belyea, J. P. Bowman, M. S. Kerley, and J. E. Williams 59

3 Plant Factors Affecting Forage Quality
C. J. Nelson and L. E. Moser 115

4 Plant Environment and Quality
D. R. Buxton and S. L. Fales 155

SECTION II. IDENTIFICATION AND QUANTITATIVE MEASUREMENT OF FORAGE QUALITY COMPONENTS

5 Quantifying Forage Protein Quality
G. A. Broderick 200

6 Carbohydrates and Forage Quality
K. J. Moore and R. D. Hatfield 229

7 Minerals in Forages
J. W. Spears 281
8 Fungal Endophytes, Other Fungi, and Their Metabolites as Extrinsic Factors of Grass Quality

C. W. Bacon 318

9 Intrinsic Chemical Factors in Forage Quality

L. Bush and H. Burton 367

10 The Application of Near Infrared Reflectance Spectroscopy (NIRS) to Forage Analysis

J. S. Shenk and M. O. Westerhaus 406

SECTION III. INTAKE AS A CRITICAL ELEMENT OF FORAGE QUALITY

11 Regulation of Forage Intake

D. R. Mertens 450

12 Measurement of Forage Intake

J. C. Burns, K. R. Pond, and D. S. Fisher 494

13 Prediction of Intake as an Element of Forage Quality

D. J. Minson and J. R. Wilson 533

SECTION IV. ROLE OF DIGESTION AND METABOLISM IN DETERMINING FORAGE QUALITY

14 Processes of Digestion and Factors Influencing Digestion of Forage-Based Diets by Ruminants

N. R. Merchen and L. D. Bourquin 564

15 Measurement of In Vivo Forage Digestion by Ruminants

R. C. Cochran and M. L. Galyean 613
16 Estimation of Digestibility of Forages by Laboratory Methods

W. P. Weiss

17 Methodology for Estimating Digestion and Passage Kinetics of Forages

W. C. Ellis, J. H. Matis, T. M. Hill, and M. R. Murphy

SECTION V. INTEGRATING CONCEPTS AFFECTING CHANGES IN FORAGE QUALITY

18 Modeling Forage Quality Changes in the Growing Crop

G. W. Fick, P. W. Wilkens, and J. H. Cherney

19 Foraging Behavior in Grazing Animals and its Impact on Plant Communities

J. Hodgson, D. A. Clark, and R. J. Mitchell

20 Changes in Forage Quality During Harvest and Storage

C. A. Rotz and R. E. Muck

21 Assessing Forage Quality Using Integrated Models of Intake and Digestion by Ruminants

A. W. Illius and M. S. Allen

SECTION VI. IMPROVING FORAGE QUALITY AND EVALUATION

22 Alteration of Plants Via Genetics and Plant Breeding

K. P. Vogel and D. A. Sleper

23 Modification of Forage Quality After Harvest

L. L. Berger, G. C. Fahey, Jr., L. D. Bourquin, and E. C. Titgemeyer
24 Forage Quality Indices: Development and Application

J. E. Moore
PREFACE

The chapters in this text were prepared in conjunction with the National Conference on Forage Quality, Evaluation, and Utilization held at the University of Nebraska, Lincoln, from April 13-15, 1994. The format of the book generally follows the symposium agenda. All chapters were reviewed by the Editor-in-Chief, the three Associate Editors, and two outside reviewers. Chapters were revised in accordance with important points made by these individuals.

This is the 25th anniversary of the first National Conference on Forage Quality Evaluation and Utilization held at the same location on September 3-4, 1969. The Proceedings of that Conference were published by the Nebraska Center for Continuing Education in 1970. The Conference was considered a milestone in the field of forage science and the proceedings have proven to be an extremely valuable reference for scientists in a variety of disciplines. Impetus for the 25th anniversary Conference came about as a result of the enthusiasm of two individuals - Dr. Terry J. Klopfenstein and Dr. James R. Forwood. Both served as co-chairs of the Conference Steering Committee until Dr. Forwood's untimely death in January, 1992.

The Editors of the book and the Steering Committee for the Conference would like to dedicate these proceedings to the memory of Jim Forwood. His enthusiasm and encouragement to summarize the state of the knowledge of forage quality and utilization was a major factor that stimulated planning for this Conference. Jim's own research activity centered around the forage/animal interface. He was keenly interested in developing research techniques and improved grazing systems that met livestock nutritional needs and plant requirements. He was equally comfortable interacting with plant or animal scientists. Jim was a native Nebraskan and received the B.S. degree from the University of Nebraska in Natural Resources and Wildlife Management. After graduation, Jim became interested in forages and range when he worked on the USDA-ARS project on pasture weed control. He finished a Master's degree at the University of Nebraska and went to Kansas State University to further his education in Range Management. After receiving a Ph.D., he joined the USDA-ARS Animal Physiology and Nutrition Unit at the University of Missouri as a pasture agronomist. In 1989, he transferred to the USDA-ARS range program at Fort Collins, Colorado, where he worked until his death. His interests included range management, forage management, animal science, and wildlife management, but most of all, he was interested in how animals utilized the forage available to them. We are deeply indebted to him for his leadership which resulted in forage and animal scientists from many places coming together to take part in this Conference. We wish he could have participated in this milestone event.

The variety of disciplines, industries, and associations involved in the field of forage quality research makes it a rich and diverse field of study, one not dominated by any single professional group. This Conference and the monograph resulting from the Conference provide a multidisciplinary look
at this field. The varied perspectives on a shared interest—the future of forage science—strengthen the Conference and the future of the field.

The information presented in this book provides an historical foundation as well as a review of state-of-the-art developments in forage science. Twenty-five years of progress in forage quality, evaluation, and utilization are detailed along with "cutting edge" research in this field. New directions for future research and development are explored.

The text revolves around six major sections. These include: 1) Overview of Forage Science; 2) Identification and Quantitative Measurement of Forage Quality Components; 3) Intake as a Critical Element of Forage Quality; 4) Role of Digestion and Metabolism in Determining Forage Quality; 5) Integrating Concepts Affecting Changes in Forage Quality; and 6) Improving Forage Quality and Evaluation. Between three and six chapters contribute to the development of each major section topic. Nearly half of the chapters are co-authored by scientists at different institutions. Thus, different perspectives on a particular subject are brought out, even within the same chapter. In addition, chapter authors have attempted to define those areas where more information is needed and where new research efforts should concentrate.

Finally, the Steering Committee and editors of the book owe a debt of gratitude to all authors, reviewers, and sponsors of the Conference. Without their outstanding effort, including their moral and financial support, this Conference would not have been possible. A special thanks goes to the American Society of Agronomy, the Crop Science Society of America, and the Soil Science Society of America for publishing the book.

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