Contents

Preface, ix
List of Contributors, xi
In Memoriam, xiii
The Metric System, xv
The Last of the Virgin Sod, xvii
Flesh is Grass, xix

PART I  CHARACTERISTICS OF FORAGE SPECIES, 1

1  Forages and Grasslands in a Changing World, 3
   C. Jerry Nelson, Kenneth J. Moore, and Michael Collins

2  Structure and Morphology of Grasses, 19
   Kenneth J. Moore and C. Jerry Nelson

3  Structure and Morphology of Legumes and Other Forbs, 35
   Robert B. Mitchell and C. Jerry Nelson

4  Physiology of Forage Plants, 51
   Jennifer W. MacAdam and C. Jerry Nelson

5  Environmental Aspects of Forage Management, 71
   Jeffrey J. Volenec and C. Jerry Nelson

6  Grasses for Northern Areas, 87
   Michael Collins and C. Jerry Nelson

7  Grasses for Southern Areas, 103
   Daren D. Redfearn and C. Jerry Nelson

8  Legumes for Northern Areas, 117
   Craig C. Sheaffer, M. Scott Wells, and C. Jerry Nelson
Contents

9 Legumes for Southern Areas, 133
   Lynn E. Sollenberger and Michael Collins

10 Forage Crops for Bioenergy and Industrial Products, 151
   Kenneth J. Moore and Emily A. Heaton

       Compendium of Common Forages, 163
       Kenneth J. Moore

PART II FORAGE MANAGEMENT, 219

11 Forage Establishment, 221
   Marvin H. Hall and Michael Collins

12 Forage Fertilization and Nutrient Management, 235
   David J. Barker and Michael Collins

13 Integrated Pest Management in Forages, 253
   R. Mark Sulc, William O. Lamp, and Michael Collins

PART III FORAGE UTILIZATION, 267

14 Forage Quality, 269
   Michael Collins and Yoana C. Newman

15 Forage Utilization, 287
   Michael Collins, Kenneth J. Moore, and Craig A. Roberts

16 Forage-Related Animal Disorders, 301
   Michael Collins, Ali M. Missaoui, and Nicholas S. Hill

17 Preservation of Forage as Hay and Silage, 321
   Michael Collins and Kenneth J. Moore

18 Grazing Management Systems, 341
   Robert L. Kallenbach and Michael Collins

19 Managing Grassland Ecosystems, 357
   Charles P. West and C. Jerry Nelson

Appendix: Common and Botanical Names of Forages, 373
Glossary, 385
Index, 401