

Contents

Contributors, x

Preface, xvi

Section I: The Bull

Anatomy and Physiology

- 1 **Anatomy of the Reproductive System of the Bull, 5**
Ben Nabors and Robert Linford
- 2 **Endocrine and Exocrine Function of the Bovine Testes, 11**
Peter L. Ryan
- 3 **Thermoregulation of the Testes, 26**
John P. Kastelic
- 4 **Endocrine Control of Testicular Development and Initiation of Spermatogenesis in Bulls, 30**
Leonardo F.C. Brito

Breeding and Health Management

- 5 **Bull Development: Sexual Development and Puberty in Bulls, 41**
Leonardo F.C. Brito
- 6 **Breeding Soundness Examination in the Bull: Concepts and Historical Perspective, 58**
Richard M. Hopper
- 7 **Evaluation of Breeding Soundness: The Physical Examination, 64**
James Alexander
- 8 **Evaluation of Breeding Soundness: Basic Examination of the Semen, 68**
Richard M. Hopper and E. Heath King
- 9 **Ultrasound Evaluation of the Reproductive Tract of the Bull, 79**
Harry Momont and Celina Checura
- 10 **Management of Breeding Bull Batteries, 92**
E. Heath King
- 11 **Management of Bulls at Custom Collection Studs, 97**
Gary Warner

- 12 **Testicular Degeneration, 103**
Albert Barth
- 13 **Vesicular Adenitis, 109**
Albert Barth
- 14 **Inability to Breed due to Injury or Abnormality of the External Genitalia of Bulls, 113**
Herris Maxwell

Reproductive Surgery

- 15 **Local and Regional Anesthesia for Urogenital Surgery, 131**
Misty A. Edmondson
- 16 **Surgery of the Scrotum and its Contents, 136**
Dwight F. Wolfe
- 17 **Restorative Surgery of the Prepuce, 142**
Dwight F. Wolfe
- 18 **Restorative Surgery of the Penis, 155**
Dwight F. Wolfe
- 19 **Bovine Urolithiasis, 172**
Katharine M. Simpson and Robert N. Streeter
- 20 **Preparation of Teaser Bulls, 181**
Gretchen Grissett

Section II: The Cow

Anatomy and Physiology

- 21 **Anatomy of the Reproductive System of the Cow, 191**
Ben Nabors and Robert Linford
- 22 **Initiation of Puberty in Heifers, 195**
Charles T. Estill
- 23 **Neuroendocrine Control of Estrus and Ovulation, 203**
Marcel Amstalden and Gary L. Williams

- 24 **Ovarian Follicular and Luteal Dynamics in Cattle**, 219
Gregg P. Adams and Jaswant Singh
- 25 **Maternal Recognition and Physiology of Pregnancy**, 245
Caleb O. Lemley, Leticia E. Camacho and Kimberly A. Vonnahme

Breeding and Health Management

- 26 **Biosecurity and Biocontainment for Reproductive Pathogens**, 259
Carla Huston
- 27 **Beef Replacement Heifer Development**, 267
Terry J. Engelken
- 28 **Heifer Development: From Weaning to Calving**, 272
Ricardo Stockler
- 29 **Interaction of Nutrition and Reproduction in the Beef Cow**, 276
William S. Swecker Jr
- 30 **Interaction of Nutrition and Reproduction in the Dairy Cow**, 283
Butch Cargile and Dan Tracy
- 31 **Estrus Detection**, 290
Rhonda C. Vann
- 32 **Artificial Insemination**, 295
Ram Kasimanickam
- 33 **Pharmacological Intervention of Estrous Cycles**, 304
Ram Kasimanickam
- 34 **Pregnancy Diagnosis: Rectal Palpation**, 314
David Christiansen
- 35 **Biochemical Pregnancy Diagnosis**, 320
Amanda J. Cain and David Christiansen
- 36 **Reproductive Ultrasound of Female Cattle**, 326
Jill Colloton
- 37 **Beef Herd Health for Optimum Reproduction**, 347
Terry J. Engelken and Tyler M. Dohlman
- 38 **Dairy Herd Health for Optimal Reproduction**, 353
Carlos A. Risco
- 39 **Herd Diagnostic Testing Strategies**, 359
Robert L. Larson
- 40 **Beef Herd Record Analysis: Reproductive Profiling**, 364
Brad J. White
- 41 **Evaluating Reproductive Performance on Dairy Farms**, 370
James A. Brett and Richard W. Meiring
- 42 **Marketing the Bovine Reproductive Practice: Devising a Plan or Tolerating a System**, 374
John L. Myers
- 43 **Vaginal, Cervical, and Uterine Prolapse**, 383
Augustine T. Peter
- 44 **Inducing Parturition or Abortion in Cattle**, 396
Albert Barth
- 45 **Management to Prevent Dystocia**, 404
W. Mark Hilton and Danielle Glynn
- 46 **Dystocia and Accidents of Gestation**, 409
Maarten Drost
- 47 **Obstetrics: Mutation, Forced Extraction, Fetotomy**, 416
Kevin Walters
- 48 **Obstetrics: Cesarean Section**, 424
Cathleen Mochal-King
- 49 **Retained Fetal Membranes**, 431
Augustine T. Peter
- 50 **Postpartum Uterine Infection**, 440
Colin Palmer
- 51 **Cystic Ovarian Follicles**, 449
Jack D. Smith
- 52 **Postpartum Anestrus and its Management in Dairy Cattle**, 456
Divakar J. Ambrose
- 53 **Surgery to Restore Fertility**, 471
Richard M. Hopper

Pregnancy Wastage

- 54 **Fetal Disease and Abortion: Diagnosis and Causes**, 481
Wes Baumgartner
- 55 **Infectious Agents: *Campylobacter***, 518
Misty A. Edmondson
- 56 **Infectious Agents: *Trichomonas***, 524
Mike Thompson
- 57 **Infectious Agents: Leptospirosis**, 529
Daniel L. Grooms
- 58 **Infectious Agents: Brucellosis**, 533
Sue D. Hagius, Quinesha P. Morgan and Philip H. Elzer
- 59 **Infectious Agents: Infectious Bovine Rhinotracheitis**, 541
Ahmed Tibary
- 60 **Infectious Agents: Bovine Viral Diarrhea Virus**, 545
Thomas Passler
- 61 **Infectious Agents: Epizootic Bovine Abortion (Foothill Abortion)**, 562
Jeffrey L. Stott, Myra T. Blanchard and Mark L. Anderson
- 62 **Infectious Agents: *Neospora***, 567
Charles T. Estill and Clare M. Scully
- 63 **Infectious Agents: Mycotic Abortion**, 575
Frank W. Austin
- 64 **Early Embryonic Loss Due to Heat Stress**, 580
Peter J. Hansen
- 65 **Bovine Abortifacient and Teratogenic Toxins**, 589
Brittany Baughman

- 66 **Heritable Congenital Defects in Cattle, 609**
Brian K. Whitlock and Elizabeth A. Coffman
- 67 **Abnormal Offspring Syndrome, 620**
Charlotte E. Farin, Callie V. Barnwell and William T. Farmer
- 68 **Strategies to Decrease Neonatal Calf Loss in Beef Herds, 639**
David R. Smith
- 69 **Management to Decrease Neonatal Loss of Dairy Heifers, 646**
Ricardo Stockler

Section III: Assisted and Advanced Reproductive Technologies

- 70 **Use of Technology in Controlling Estrus in Cattle, 655**
Fred Lehman and Jim W. Lauderdale
- 71 **Cryopreservation of Semen, 662**
Swanand Sathe and Clifford F. Shipley
- 72 **Utilization of Sex-sorted Semen, 671**
Ram Kasimanickam
- 73 **Control of Semen-borne Pathogens, 679**
Rory Meyer
- 74 **Bovine Semen Quality Control in Artificial Insemination Centers, 685**
Patrick Vincent, Shelley L. Underwood, Catherine Dolbec, Nadine Bouchard, Tom Kroetsch and Patrick Blondin

- 75 **Superovulation in Cattle, 696**
Reuben J. Mapletoft and Gabriel A. Bó
- 76 **Embryo Collection and Transfer, 703**
Edwin Robertson
- 77 **Cryopreservation of Bovine Embryos, 718**
Kenneth Bondioli
- 78 **Selection and Management of the Embryo Recipient Herd for Embryo Transfer, 723**
G. Cliff Lamb and Vitor R.G. Mercadante
- 79 **Evaluation of *In Vivo*-Derived Bovine Embryos, 733**
Marianna M. Jahnke, James K. West and Curtis R. Youngs
- 80 **Control of Embryo-borne Pathogens, 749**
Julie Gard
- 81 ***In Vitro* Fertilization, 758**
John F. Hasler and Jennifer P. Barfield
- 82 **Cloning by Somatic Cell Nuclear Transfer, 771**
J. Lannett Edwards and F. Neal Schrick
- 83 **The Computer-generated Bull Breeding Soundness Evaluation Form, 784**
John L. Myers
- Glossary, 790
- Index, 795