

TABLE OF CONTENTS – Poultry Science, 5th Edition

1. A Global Perspective on Poultry

Introduction / Domestication and Early Use of Chickens / Domestication of Turkeys, Ducks, and Geese / Global Growth of Poultry and Egg Production / Nutritional and Other Attributes of Poultry Meat and Eggs / Health Consequences of Consuming Poultry Meat and Eggs / Efficiency of Poultry Production / Nonfood Uses of Poultry / Projections on the Future of Poultry Production

2. Commercial Poultry Industry: An Overview

Introduction / Chicken Meat Production / Egg Production / US Poultry Industry / Poultry Production in Canada / Development and Transformation of the American Poultry Industry

3. Organic, Niche, and Other Poultry with Particular Emphasis on North American and Europe

Introduction / Organic Poultry Production / Free-Range Poultry / Other Nonconventional Poultry Production Systems / Projections on the Future of Organic and Niche Poultry Production and Differentiated Products / Backyard Poultry and Their Implications / Cockfighting and Its Consequences

4. Poultry Biology

Introduction / Evolution and Classification of Birds / Integument (Skin and Feathers) / Structural Systems (Skeleton and Skeletal Muscles) / Circulatory System / Respiratory System / Digestive System / Excretory System / Reproduction System / Integration of Body Processes (Nerves and Hormone) / Thermoregulation / Effect of Light

5. Poultry Behavior

Introduction / Senses and the Central Nervous System Functioning of Poultry / Vocalizations / Other Forms of Communication / Feeding-Related Behaviors / Other Activities / Sexual Behaviors / Maternal and Neonatal Behaviors / Aggressive Behaviors and Fighting / Social Hierarchy (Pecking or Peck Orders) / Behaviors Related to Temperature Control / Behavior and Poultry Production

6. Poultry Genetics and Breeding

Introduction: The Importance of Genetics to Poultry Production / Genes, DNA, and Chromosomes / Poultry Genome and Chromosomes / The Bases of Genetic Improvement in Poultry / Inheritance of Important Traits in Poultry / Other Aspects of Poultry Genetics and Genes / Poultry Breeding / Breeds and Varieties / Organization of Commercial Poultry Breeding / Breeds and Breeding Turkeys

7. Fundamentals of Poultry Nutrition

Introduction / Classification of Nutrients / Dietary Energy / Measuring and Expressing Energy Value of Foodstuffs / Dietary Carbohydrates / Dietary Lipids (Fats) / Dietary Protein and Amino Acid Requirements / Mineral Requirements / Vitamin Requirements / Water Requirements / Antinutritive Factors in Feeds

8. Feeds, Feedstuffs, Supplements, and Additives

Introduction to Feedstuffs Used in Poultry Feeds / Energy Foodstuffs—Cereals/Grains / Energy Feedstuffs—Cereal-Milling By-Product Feeds / Energy Foodstuffs—Fats/Oils / Other Energy Feedstuffs—By-Products (e.g. Molasses, Glycerin) / Protein Supplements / Oilseed Meals / Animal Proteins / Yeast / Amino Acid Supplements / Mineral Supplements / Vitamin Supplements / Non-Nutritive Additives / Pelleting and Pellet Binders / Feed Additives that Enhance the Color or Quality of Poultry Products / Grit / Antifungal Additives (Mold Inhibitors) / Evaluating Poultry Feeds

9. Poultry Feeding Standards: Diet Formulation and Feeding Programs

Overview / Factors Involved in Formulating Poultry Diets / Overview of Feeding Standards / How to Balance Diets / Feeding Programs / Feeding Broiler Chickens / Feeding White-Egg Layers / Feeding Brown-Egg Layers / Feeding Replacement Pullets / Feeding Broiler Breeder Hens / Feeding Turkeys / Feeding Ducks / Feeding Other Avian Species

10. Poultry Management

Introduction / The Poultry Enterprise / Management and the Poultry Professional / Improving Efficiency / Inspecting Poultry Units, Birds, and Troubleshooting

11. Animal Waste and Other Impacts of Poultry on the Environment

Introduction / Environmental Stewardship / Poultry Waste (Excreta) / Disposal of Mortalities / Agriculture and Global Warming / Poultry, Nitrogen, and Water Quality / Poultry, Phosphate, and Water Quality / Other Impacts of Poultry on Water / Relationships with Neighbors and Communities

12. Stress and Welfare of Poultry

Introduction / Stress / Welfare / The United Kingdom and the Development of Welfare for Poultry / Poultry Welfare Regulation in Different Countries / Consumers and Poultry Welfare / Companies and Poultry Welfare

13. Diseases and Health of Poultry

Overview of Poultry Disease / Introduction to the Causes of Avian Diseases / Pathogenic or Infectious Diseases / Viral Diseases / Bacterial Diseases / Fungal and Fungal Production (Mycotoxin) Diseases / Absence of Prion Diseases in Poultry / Introduction to Parasites / Diseases Caused by Single-Celled Parasites / Other Internal Parasites (Roundworms, Tapeworms, and Flukes) / External Parasites and Bloodsucking Insects / Spread of Infection / Impact of Other Animals (Beetles, Rodents, and Flies) / Immunity and Defenses against Disease / Infectious Disease Prevention and Control / Vaccination / Role of Veterinarians and Diagnostic Laboratories / Antibiotics / Specific-Pathogen-Free (SPF) Programs / Metabolic Diseases / Environmental Stress / Behavioral Problems

14. Food Safety

Introduction / Impact of Foodborne Diseases / Government and Food Safety / Pathogens and Food Safety / Food Safety Aspects of Eggs / Food Safety Aspects of Poultry Meat / Food Safety in Food Manufacturing, Retailers, and Restaurants / Food Safety and the Consumer / Allergens and Food / Chemicals and Pesticides in Poultry

and Eggs / Antibiotics in Poultry and Eggs / Irradiation of Poultry

15. Incubation

Introduction / Poultry Reproduction / Development of the Chick Embryo / Overview of Hatcheries / On-Farm Handling of Hatching Eggs / Egg Storage / Incubation (Incubator Operation) / Other Practices for the Treatment of Eggs / Assessment of Chick Quality / Treatment of Newly Hatched Chicks / Waste Disposal

16. Approaches Common to Different Poultry Types: Biosecurity, Brooding, Litter, Water Quality, Pests, and Beak Conditioning

Overview of Management Approaches Common to Different Poultry / Biosecurity / Brooding / Litter / Water and Water Quality / Controlling Pests / Rodents / Darkling Beetles / Other Pests / Beak Conditioning

17. Poultry Houses and Equipment

Introduction / Overview of Buildings and Equipment / Locations for Buildings / Building and Equipment for Contract Growers / Principles of Temperature Control / Cooling Poultry Houses / Heating Poultry Houses / Air Quality in Poultry Houses / Ventilation / Brooding for Chicks and Poults / Feeders / Lighting / Water Quality / Drinkers/Waterers / Sanitation / Other Processes and Equipment / Housing and Equipment for Layers / Brooding and Equipment for Chicks / Housing and Equipment for Replacement Pullets / Houses and Equipment for Broilers / Houses and Equipment for Turkeys

18. Layers and Eggs

Introduction / Composition of the Egg / Nutritional Value of Eggs / Biology of the Production of the Egg / Overview of Commercial Egg Production / Management of Layers / Layer Production / Pullet Production / Marketing and Processing of Eggs / Uses of Eggs in Foods and the Food Industry / Biomedical Egg Products / Industrial Uses of Eggs

19. Broiler Chickens and Chicken Meat

Introduction / Composition of Chicken Meat / The Biology of Meat Production / An Overview of Commercial Production of Broiler Chickens / Overall Considerations of Broiler Chicken Management / Broiler Chicken Processing / Broiler Breeders and Reproduction / Other Poultry Products

20. Turkeys and Turkey Meat

Introduction / Composition of Turkey Meat / The Biology of Turkey Production / An Overview of Commercial Production of Turkeys / Overall Considerations of Turkey Production / Meat Turkeys and Their Management / Turkey Processing, Further Processing, and Marketing / Turkey Breeders and Reproduction / Handling Eggs, Incubation, and Poult Production / Niche Markets

21. Poultry Industry, Business, and Marketing

Introduction / Vertical Coordination / Vertical Integration / World Trade in Poultry and Eggs / International Competitiveness / Vertical Coordination in the Egg Industry / Poultry Business Issues / Business Planning, Standard Operating Procedures, Records, and Databases / Allied Poultry Industries / Poultry Research / Marketing of Chicken Meat / Impact of Quick-Service Restaurants.

22. Ducks and Geese

Overview of Global Production of Ducks and Goose Meat, Eggs, and Feathers / Introduction to Ducks / Global Production of Ducks / Duck Production in the United States / Domestication and Development of Ducks / Duck Meat / Duck Eggs / Duck Breeds / Duck Breeding / Duck Feeding and Management / Duck Diseases and Health / Processing and Marketing Ducks / Introduction to Geese / Domestication / Goose Meat / Breeds of Geese / Incubation / Goose Feeding and Management / Processing and Marketing Geese / Goose Feathers

23. Exotic Poultry

Introduction / Overview of Ratites (Ostriches, Emus, and Rheas) / Ostriches / Emus / Pigeons / Overview of Game and Ornamental Birds / Guinea Fowl / Other Game and Ornamental Birds

24. Successful Application and Interviewing for a Position

Introduction / Resume Building and Networking / Resumes and Cover Letters / Reference Letters—Who to Ask and Why / Interviewing / Internships / Professional School/Graduate School / Applying for a Faculty Position

Appendix I: Poultry Breeds

Appendix II: National Poultry Improvement Plan (United States)

Appendix III: Development of Chick Embryo