# **Contents**

# Preface v

#### 1. Introduction 1

History, Taxonomy, and Domestication of the Rabbit 2
Potential of the Rabbit for Meat and Fur Production 6
Production of Pharmaceuticals 11
Youth Programs 11
Hobbies and Pets 12
Laboratory Use 13
Factors Limiting Rabbit Production 14
Sources of Helpful Information 16
A Rabbit by Any Other Name 17

# 2. Rabbit Production Around the World 19

Europe 20 North and South America 23 Asia 25 Australia and New Zealand 26 Africa 27

#### 3. Rabbit Breeds 33

Selecting a Breed 33 Purchasing Breeding Stock 34 Breeds of Rabbits 36

### 4. The Rabbitry and Its Equipment 55

Planning the Rabbitry 55
The Rabbit Building 57
Hutches and Cages 63
Feeding Equipment 68
Watering Equipment 69
Nest Boxes 71
Identification Equipment 75
Feed and Utility Cart 76
Other Equipment 76

# 5. Rabbit Management 77

Handling Rabbits 78 Number of Bucks 79 Age to Breed 79 Breeding Schedule 80 The Mating Process 81 Gestation Period 83 Factors That Prevent Conception 83 Determining Pregnancy 87 Kindling 90 Care of Young Litters 92 Nest Box Management 93 Fostering Young 94 Causes of Losses in Young Litters 96 Feeding the Doe After Kindling 97 Weaning 97 Determination of Sex 98

Tattooing and Ear Tags 99

Care of the Herd in Hot Weather 100

Fur Chewing 101

Other Causes of Hair Loss 102

Sanitation 103

Shedding or Molting 105

Environmental Effects on Rabbit Performance 106

Hypnosis 108

Breeding Herd Replacements 108

Herd Records 109

# 6. Economics and Financial Management 113

Financing 114

Expenses 115

Income 117

Cash Flow 117

### 7. Principles of Rabbit Nutrition 121

Nutrient Categories 121

Protein 122

Carbohydrates 123

Fats 124

Minerals 124

Vitamins 130

Fat-Soluble Vitamins 132

Water-Soluble Vitamins 137

Water 140

Digestive Processes in the Rabbit 140

Feed Analysis 147

Relationships Between Feed Manufacturers and Rabbit Raisers 151

# 8. Feeds and Feeding 153

Nutrient Requirements of Rabbits 153

Composition of Feeds 159

Roughages 160

Concentrates 165

Non-nutritive Feed Additives 173
Feed Formulation, Preparation, and Processing 177

Grazing Rabbits 184

Orphan Litters 185

Conditioning Show Rabbits 185

#### 9. Toxins in Feeds 187

Goitrogens 188

Gossypol 188

Lectins (Hemagglutinins) 189

Mimosine 189

Mycotoxins 190

Nitrates 192

Oxalates 192

Pyrrolizidine Alkaloids 192

Saponins 193

Trypsin Inhibitors 193

Urea 193

Poisonous Plants 194

Herbal Remedies 194

Agricultural Chemicals—Pesticides and Herbicides 195

### 10. Rabbit Diseases and Health Problems 197

General Considerations 197

Ouarantine 199

Diagnosing Diseases 200

Major Rabbit Diseases and Health Problems 203

Other Rabbit Diseases and Health Problems 215

## 11. Rabbit Reproduction 243

The Male 243

The Female 248

Artificial Insemination 260

Winter Breeding Depression 265

Embryo Transfer 267

### 12. Rabbit Behavior 269

Ethology: The Science of Behavior 271

Domestication of Rabbits 272

Behavior of Wild Rabbits 272

Behavior of Domestic Rabbits 274

Systems of Behavior in Rabbits 275

Environmental Factors Affecting Behavior 284

### 13. Principles of Rabbit Genetics 287

Genes—The Basic Units of Inheritance 288
Mendelian Genetics 289
Other Basic Genetic Terms 290
Gene Expression 293

# 14. Breeding Systems 299

Inbreeding 302

Linebreeding 306

Outcrossing 308

Crossbreeding 310

Random Mating 319

Summary 320

# 15. Genetic Selection for Herd Improvement 321

Selection for Qualitative Traits 322

Selection for Quantitative Traits 324

Recordkeeping 335

Computers as an Aid to Genetic Selection 336

# 16. Coat Color Genetics of Rabbits 339

Classification of Major Coat Color Genes 340

Coat Pattern Genes 351

Modifier Genes 358

Coat Structural Genes 358

Coat Color Breeding Schemes 364

### 17. Rabbit Shows 373

Preparation of Rabbits for Shows 374
Shipping Show Rabbits 376
Judging and Showing 376
Registering Rabbits 378

### 18. Pet Rabbits 383

Introduction 383 House Training 385 Nutrition 386 Health 387

#### 19. Animal Welfare 391

# 20. Rabbits for Family and Small Farm Development 397

Rabbits as a Family Activity 399
Integrating Rabbit Production on the Family Farm 402
Diversifying Rabbit Production on the Family Farm 406
Market Development 408

# 21. Rabbit Production in Developing Countries 411

Cages and Equipment 412
Feeding and Management 413
Special Problems in Tropical Rabbit Production 418
Rabbits as Pests 421
Agencies Involved in International Development of Rabbit Production 422

### 22. Rex Fur Production 427

Hair Structure and Growth 427
Checking for Prime Pelts 431
Production of Rex Rabbits for Fur 433
Management of Rex Rabbits 434
Manufacture of Rex Garments 435
Economic Potentials of the Rex Industry 437

# 23. Angora Wool Production 439

Wool Growth 441

Management 441

Wool Block 442

Equipment for Grooming and Wool Removal 443

Grooming 443

Removal of Wool 444

Care of Sheared or Clipped Rabbits 450

Grading and Storing Angora Wool 450

Home Spinning of Angora Wool 451

### 24. Meat Production 453

Fryers 453

Stewers 456

Nutritional Properties of Rabbit Meat 456

Alternative Systems of Commercial Rabbit Production 457

# 25. Slaughtering and Preparation of Meat and Skins 459

Meat 460

Skins 461

# 26. Marketing Rabbits and Their Products 465

Rabbit Meat 465

Breeding Stock 471

Laboratory Stock 471

Skins 472

Pharmaceuticals 472

Angora Wool 473

Fur Craft 474

Fertilizer 474

Worms 475

# Glossary 477

#### Index 483