

THOMSON  
DELMAR LEARNING

EXPLORING

# Agriscience



3<sup>rd</sup>  
edition

RAY V. HERREN

# Contents

<b>CHAPTER 1</b>	<b>The World of Agriculture . . . . .</b>	<b>1</b>
	Science and Agriculture 3 • Growing Plants 4 • The Animal Industry 8 • Agricultural Exports and Imports 11 • Distribution 13 • Summary 15 • Chapter Review 15	
<b>CHAPTER 2</b>	<b>The History of Agriculture . . . . .</b>	<b>19</b>
	American Agriculture 22 • King Cotton 23 • The Cattle Industry 26 • Crop Production 30 • Scientific Research 32 • Changes in Agriculture 34 • Summary 35 • Chapter Review 36	
<b>CHAPTER 3</b>	<b>Soil: The Origin of Life . . . . .</b>	<b>40</b>
	Organic Soils 41 • Inorganic Soils 43 • Water-Deposited Soil 45 • Soil Deposited by Wind 46 • Soil Texture 48 • Soil pH 51 • Soil Horizons 51 • The Soil Ecosystem 53 • Summary 56 • Chapter Review 56	
<b>CHAPTER 4</b>	<b>Plant Structures and Their Uses . . . . .</b>	<b>60</b>
	Stems 61 • Leaves 65 • Flowers 66 • Seeds 68 • Roots 70 • Summary 72 • Chapter Review 72	
<b>CHAPTER 5</b>	<b>Agricultural Pests . . . . .</b>	<b>76</b>
	Insects 77 • Weeds 82 • Genetic Engineering 87 • Summary 88 • Chapter Review 88	
<b>CHAPTER 6</b>	<b>Floriculture . . . . .</b>	<b>92</b>
	International Aspect 93 • National Aspect 94 • Plants for Florists 95 • Physical Environment 100 • Greenhouse Benches 100 • Growing Cut Flowers 101 • Flower Arrangements 105 • Summary 106 • Chapter Review 106	
<b>CHAPTER 7</b>	<b>Nursery Production . . . . .</b>	<b>110</b>
	Growing Media 112 • Growing Areas 115 • Outside Growing Areas 117 • Mist Areas 120 • Propagation 121 • Plant Production 124 • Summary 126 • Chapter Review 126	

<b>CHAPTER 8</b>	<b>Landscaping</b> . . . . .	<b>129</b>
	Design the Landscape 130 • Plant Materials 132 • Phases of Landscape Development 133 • Interiorscaping 149 • Summary 151 • Chapter Review 152	
<b>CHAPTER 9</b>	<b>Fruit and Nut Production</b> . . . . .	<b>156</b>
	Pome Fruits 158 • Stone Fruits 162 • Citrus Fruit 165 • Nut Production 167 • Summary 171 • Chapter Review 171	
<b>CHAPTER 10</b>	<b>Row Crops</b> . . . . .	<b>175</b>
	Grain Crops 176 • Oil Crops 184 • Fiber Crops 187 • Summary 191 • Chapter Review 192	
<b>CHAPTER 11</b>	<b>Forest Science</b> . . . . .	<b>195</b>
	The Natural Forest 198 • Forest Succession 199 • The Forest Ecosystem 203 • Wood Fiber Production 205 • Summary 209 • Chapter Review 209	
<b>CHAPTER 12</b>	<b>Protecting the Environment</b> . . . . .	<b>213</b>
	Pesticides 216 • Water Pollution 219 • Soil Erosion 225 • Nitrate Pollution 227 • Wetlands 229 • Summary 231 • Chapter Review 231	
<b>CHAPTER 13</b>	<b>Organic Agriculture</b> . . . . .	<b>235</b>
	The Production Process 237 • Fertilizers 238 • Insect Control 241 • Organic Animal Agriculture 242 • Summary 246 • Chapter Review 247	
<b>CHAPTER 14</b>	<b>The Livestock Industry</b> . . . . .	<b>250</b>
	The Meat Industry 251 • The Horse Industry 262 • Small Animals 264 • Summary 266 • Chapter Review 266	
<b>CHAPTER 15</b>	<b>The Dairy Industry</b> . . . . .	<b>270</b>
	Milk Production 272 • Cheese 279 • Yogurt 281 • Summary 281 • Chapter Review 282	

<b>CHAPTER 16</b>	<b>The Poultry Industry . . . . .</b>	<b>285</b>
	The Broiler Industry 287 • The Layer Industry 295 • Turkey Production 296 • Other Poultry 297 • Summary 299 • Chapter Review 299	
<b>CHAPTER 17</b>	<b>The Science of Aquaculture . . . . .</b>	<b>303</b>
	Catfish Production 306 • Cool-Water Fish 312 • Growing Crustaceans 313 • Ornamental Fish 314 • Summary 315 • Chapter Review 316	
<b>CHAPTER 18</b>	<b>Companion Animals . . . . .</b>	<b>319</b>
	Health Benefits 322 • Service Animals 325 • Diseases and Afflictions 328 • Industry 330 • Health Care 332 • Responsible Ownership 333 • Summary 335 • Chapter Review 335	
<b>CHAPTER 19</b>	<b>Preserving Our Food Supply . . . . .</b>	<b>339</b>
	Method of Preserving Foods 341 • Food Safety 348 • Summary 352 • Chapter Review 353	
<b>CHAPTER 20</b>	<b>The Ethical Treatment of Animals . . .</b>	<b>356</b>
	Animal Welfare 358 • Animal Rights Activists 366 • Summary 368 • Chapter Review 368	
<b>CHAPTER 21</b>	<b>Selecting and Using Hand Tools . . . . .</b>	<b>372</b>
	Introduction 373 • Simple Machines 374 • Working With Hard Woodworking Tools 376 • Measuring and Marking Tools 378 • Summary 391 • Chapter Review 392	
<b>CHAPTER 22</b>	<b>Small Engine Operation . . . . .</b>	<b>395</b>
	Operating Principles of small Engines 399 • The Four- Stroke Cycle Engine 402 • The Four-Stroke Cycle Engine 406 • Engine Systems 409 • Summary 413 • Chapter Review 413	

<b>CHAPTER 23</b>	<b>Biotechnology: The Future of Agriculture . . . . .</b>	<b>417</b>
	Biotechnology 418 • Careers in Agriscience 426 • Summary 427 • Chapter Review 428	
<b>CHAPTER 24</b>	<b>High School Agricultural Education Programs . . . . .</b>	<b>431</b>
	Modern Programs in Agriculture 432 • Summary 441 • Chapter Review 441	
<b>CHAPTER 25</b>	<b>Careers in Agricultural Science . . . . .</b>	<b>445</b>
	Plant Science 446 • Animal Science 449 • Food Science 454 • Natural Resources 458 • Summary 460 • Chapter Review 460	
	<b>Glossary . . . . .</b>	<b>465</b>
	<b>Index . . . . .</b>	<b>479</b>