

**Florida Teacher Certification Examinations
Test Information Guide
for
Agriculture 6–12**



FLORIDA DEPARTMENT OF EDUCATION
www.fdoe.org

Third Edition

Developed, produced, and printed under the authority of the
Florida Department of Education

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Test and Test Information Guide Development

Teacher Certification Testing

Since 1980, Florida teacher certification candidates have been required to pass the Florida Teacher Certification Examinations (FTCE), which has consisted of tests in reading, writing, mathematics, and professional knowledge. The 1986 Florida Legislature modified the testing program by also requiring teacher candidates to pass a test in the subject area in which they wish to be certified. In addition, the Legislature substituted the Florida College-Level Academic Skills Test (CLAST) for the reading, writing, and mathematics portions of the FTCE. The 2000 Florida Legislature replaced the CLAST with the General Knowledge Test, effective July 1, 2002.

The subject area knowledge tested on the Agriculture 6–12 examination was identified and validated by committees of content specialists from within the state of Florida. Committee members included public school teachers, district supervisors, and college faculty with expertise in this field. Committee members were selected on the basis of recommendations by district superintendents, public school principals, deans of education, experts in the field, and other organizations. In developing the test, the committees used an extensive literature review, interviews with selected public school teachers, a large-scale survey of teachers, pilot tests, and their own professional judgment.

Role of the Test Information Guide

The purpose of this test information guide is to help candidates taking the subject area test in Agriculture 6–12 prepare effectively for the examination. The guide was designed to familiarize prospective test takers with various aspects of the examination, including the content that is covered and the way it is represented. The guide should enable candidates to direct their study and to focus on relevant material for review.

This test information guide is intended primarily for use by certification candidates, who may be students in a college or university teacher-preparation program, teachers with provisional certification, teachers seeking certification in an additional subject area, or persons making a career change to public school teaching. Candidates may have studied and worked in Florida or may be from out of state.

College or university faculty may also use the guide to prepare students for certification, and inservice trainers may find the guide useful for helping previously certified teachers prepare for recertification or multiple certification.

This test information guide is not intended as an all-inclusive source of subject area knowledge, nor is it a substitute for college course work in the subject area. The sample questions are representative of the content of the actual test; however, they are not actual test questions from an actual test form. Instead, the guide is intended to help candidates prepare for the subject area test by presenting an overview of the content and format of the examination.

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Preparation for the Test

The following outline may help you to prepare for the examination. Adapt these suggestions to suit your own study habits and the time you have available for review.

Overview

- **Look over the organization of the test information guide.**

Section 1 discusses the development of the test and test information guide.

Section 2 (this section) outlines test preparation steps.

Section 3 offers strategies for taking the test.

Section 4 presents information about the content and structure of the test.

Section 5 lists question formats and includes sample test questions.

Section 6 provides an annotated bibliography of general references you may find useful in your review.

Section 7 identifies a source of further information.

Self-Assessment

- **Decide which content areas you should review.**

Section 4 includes the competencies and skills used to develop this subject area test and the approximate proportion of test questions from each competency area.

Review

- **Study according to your needs.**

Review all of the competencies and concentrate on areas with which you are least familiar.

Practice

- **Acquaint yourself with the format of the examination.**

Section 5 describes types of questions you may find on the examination.

- **Answer sample test questions.**

Section 5 gives you an opportunity to test yourself with sample test questions and provides an answer key and information regarding the competency to which each question is linked.

Final preparation

- **Review test-taking advice.**

Section 3 includes suggestions for improving your performance on the examination.

- **Refer to field-specific references.**

Section 6 includes an annotated bibliography listing general references keyed to the competencies and skills used to develop this subject area test.



Test-Taking Advice

- Go into the examination prepared, alert, and well rested.
- Complete your travel arrangements prior to the examination date. Plan to arrive early so that you can locate the parking facilities and examination room without rushing.
- Dress comfortably and bring a sweater or jacket in case the room is too cool.
- Take the following with you to the test site:
 - Admission ticket
 - Proper identification as described in "Identification Policy"
- There are many strategies for taking a test and different techniques for dealing with different types of questions. Nevertheless, you may find the following general suggestions useful.
 - Read each question and all the response options carefully before selecting your answer. Pay attention to all of the details.
 - Go through the entire test once and answer all the questions you are reasonably certain about. Then go back and tackle the questions that require more thought.
 - When you are not certain of the right answer, eliminate as many options as you can and choose the response that seems best. It is to your advantage to answer all the questions on the test, even if you are uncertain about some of your choices.
 - After completing the examination, go back and check every question. Verify that you have answered all of the questions and that your responses are correctly entered.



4

Competencies and Skills and Test Blueprint

The table on the following pages lists the competencies and skills used as the basis for the Agriculture 6–12 examination. These competencies and skills represent the knowledge that teams of teachers, subject area specialists, and district-level educators have determined to be important for beginning teachers. This table could serve as a checklist for assessing your familiarity with each of the areas covered by the test. The competencies and skills should help you organize your review. The test blueprint indicates the approximate percentage of test questions that will cover the specific competency on the exam.

Competencies are broad areas of content knowledge.

Skills identify specific behaviors that demonstrate the competencies.

Percentages indicate the approximate proportion of test questions that represent the competencies on the test.

The following excerpt illustrates the components of the table.

Competency/Skill		Approx. %
1	Knowledge of leadership, career opportunities, and employability skills	10%
1	Identify the National FFA organization mission, program of activities, career development events, awards, and degree programs.	
2	Identify important events in the history of the FFA.	
3	Identify the organizational structure of the FFA.	
4	Identify the responsibilities of FFA chapter officers and committee chairpersons.	
5	Identify public speaking skills.	
6	Identify the rules of parliamentary procedure.	
7	Identify career opportunities in agriculture.	
8	Identify skills for obtaining and maintaining employment.	

Competency (arrow pointing to '1' in the first row)

Approximate percentage of total test questions (test blueprint) (arrow pointing to '10%' in the first row)

Skills (1-8) (arrow pointing to the list of skills in the first row)

Table of Competencies, Skills, and Approximate Percentages of Questions

Competency/Skill		Approx. %
1	Knowledge of leadership, career opportunities, and employability skills	10%
1	Identify the National FFA organization mission, program of activities, career development events, awards, and degree programs.	
2	Identify important events in the history of the FFA.	
3	Identify the organizational structure of the FFA.	
4	Identify the responsibilities of FFA chapter officers and committee chairpersons.	
5	Identify public speaking skills.	
6	Identify the rules of parliamentary procedure.	
7	Identify career opportunities in agriculture.	
8	Identify skills for obtaining and maintaining employment.	
2	Knowledge of animal science	15%
1	Identify livestock and companion animal terminology.	
2	Identify desirable characteristics of livestock and companion animals.	
3	Identify animal production systems and reproduction practices.	
4	Identify animal nutrition, feedstuffs, and feeding practices.	
5	Identify components of animal health, including diseases, health and sanitation practices, and veterinary terminology.	
6	Identify safety practices related to animal handling.	
7	Identify principles and methods of marketing animals and animal products.	
8	Identify appropriate procedures for animal exhibition.	
9	Identify animal anatomy and physiology.	
10	Identify practices in aquatic animal production.	
11	Identify practices that promote animal welfare.	

3 Knowledge of soil science		10%
1	Evaluate the suitability of different types of soil for the production of various crops.	
2	Identify soil formations and the classifications of soil.	
3	Identify methods and procedures for soil testing.	
4	Identify formulations and use of different types of fertilizer.	
5	Identify methods and techniques of soil preparation, water management, and rotation in the production of crops.	
6	Identify types of soil erosion and conservation practices.	
4 Knowledge of plant science		15%
1	Apply basic principles of taxonomy to plant classification.	
2	Identify distinguishing features of major plant groups.	
3	Identify requirements for plant growth and development.	
4	Identify parts of plants and their functions.	
5	Identify the physiological processes in plants.	
6	Identify the effects of different environmental factors on plant growth and development.	
7	Identify sexual and asexual plant reproduction processes.	
8	Identify basic principles of plant genetics and their application to agriculture.	
9	Identify types, varieties, characteristics, and uses of economically important crops and ornamentals grown in Florida.	
10	Identify procedures and techniques for selecting, planting, caring for, harvesting, and handling food crops.	
11	Identify the effects of pests and nutrient deficiencies on crops, turf, and ornamentals.	
12	Identify proper procedures and practices for greenhouse management.	
13	Identify procedures and techniques for preparing and using different types of plant media.	
14	Identify procedures and techniques for selecting and caring for ornamental crops.	
15	Identify basic principles and techniques of landscape design and construction.	
16	Identify proper handling and application of chemicals.	

5 Knowledge of agricultural systems technology	5%
<ol style="list-style-type: none"> 1 Identify safety practices used in an agriculture laboratory. 2 Identify common hand and power tools and their proper uses. 3 Identify the proper use of oxyacetylene welding, cutting, and metal fabrication equipment. 4 Use measurement and mathematics in agriculture applications. 5 Identify basic agricultural equipment safety practices. 6 Identify procedures for maintaining tools and equipment. 7 Identify basic principles of gas and diesel engine operation. 8 Identify facility construction and building maintenance practices. 9 Identify principles of electric controls, motors, and electricity. 10 Identify principles in managing plumbing and irrigation systems. 11 Apply principles of physics to agricultural systems. 12 Identify uses of computer technology in agriculture. 	
6 Knowledge of environmental sciences and natural resources	10%
<ol style="list-style-type: none"> 1 Identify conservation practices related to renewable and nonrenewable resources. 2 Identify the hydrologic cycle in Florida. 3 Identify governmental agencies that regulate environmental and natural resources. 4 Identify the relationships within Florida ecosystems. 5 Identify positive and negative impacts of agriculture on the environment. 	

7 Knowledge of agricultural business management, economics, and marketing	10%
<ol style="list-style-type: none"> 1 Identify the role and importance of the agribusiness sector in economic development. 2 Identify the input, production, and marketing sectors of the agribusiness system. 3 Identify methods of planning and organizing agribusiness enterprises. 4 Use record keeping, budgeting, and financial statements in making budgetary decisions. 5 Identify sources and uses of credit in agriculture. 6 Identify the principles of supply and demand and the economics of resource use for agricultural commodities. 7 Identify practices used in agricultural marketing and international trade. 8 Identify the roles of government agencies that serve agriculture. 9 Identify the types of supervised agriculture experience (SAE) programs and their benefits. 	
8 Knowledge of agricultural department management and professional development	15%
<ol style="list-style-type: none"> 1 Identify professional publications and organizations for agricultural education. 2 Identify strategies in agricultural curriculum planning, curriculum development, and evaluation of instructional resource materials. 3 Identify the functions of agricultural education advisory committees, alumni, and community support groups. 4 Identify important legislation affecting the development of agricultural education. 5 Identify the roles of FFA, SAE, and classroom instruction in an agriculture program. 6 Identify principles of agricultural classroom and laboratory management. 	

9 Knowledge of biotechnology		5%
1	Identify historical milestones, advantages, and disadvantages in biotechnology.	
2	Identify the parts of a cell structure and their functions.	
3	Predict the characteristics and performance of offspring based upon the genetic makeup of the parents.	
10 Knowledge of food science and systems		5%
1	Identify major food commodities.	
2	Identify food safety issues on local, state, national, and international levels.	
3	Identify beneficial microorganisms involved in the food industry.	
4	Identify appropriate food-handling procedures.	
5	Identify emerging techniques in food processing and preservation.	
6	Identify important historical events and developments in food production.	
7	Identify differences in agricultural practices employed in various regions of the world.	

5

Test Format and Sample Questions

The Agriculture 6–12 subject area test consists of approximately 120 multiple-choice questions. You will have two and one-half hours to complete the test.

Each question will contain four response options, and you will indicate your answer by selecting **A**, **B**, **C**, or **D**.

The table below presents types of questions on the examination and refers you to a sample question of each type.

Type of Question	Sample Question
<p>Sentence completion Select the response option that best completes the sentence.</p>	<p>Question 4, page 15</p>
<p>Direct question Choose the response option that best answers the question.</p>	<p>Question 5, page 15</p>
<p>Scenario Examine a situation, problem, or case study. Then answer a question, make a diagnosis, or recommend a course of action by selecting the best response option.</p>	<p>Question 8, page 16</p>
<p>Graphics Examine a drawing or a diagram and select the response option that best answers the question.</p>	<p>Question 13, page 17</p>
<p>Command Select the best response option.</p>	<p>Question 28, page 20</p>

Sample Questions

The following questions represent both the form and content of questions on the examination. These questions will acquaint you with the general format of the examination; however, these sample questions do not cover all of the competencies and skills that are tested and will only approximate the degree of examination difficulty.

An answer key follows at the end of the sample questions. The answer key includes information regarding the competency to which each question is linked.

DIRECTIONS: Read each question and select the best response.

1. The primary purpose of the Student Development division of an FFA chapter's program of activities is to
 - A. promote personal and group activities that improve life skills.
 - B. cooperate with other groups in activities that enhance community life.
 - C. encourage members to work together as a group in all activities.
 - D. develop members' skills in marketing chapter activities to the community.

2. Appointing members to committees is the responsibility of which officer in a local FFA chapter?
 - A. president
 - B. vice president
 - C. secretary
 - D. sentinel

3. According to FFA guidelines, which type of speech must be developed within 30 minutes before it is presented?
 - A. extemporaneous
 - B. informative
 - C. persuasive
 - D. prepared

4. To change the wording of a motion, a person should present a motion to
 - A. appeal.
 - B. reconsider.
 - C. rescind.
 - D. amend.

5. A meat inspector is involved in which agricultural career area?
 - A. agricultural processing
 - B. agricultural supplies and services
 - C. agricultural technology
 - D. agricultural production

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6. The period of time when a female will accept a male for breeding is called
- A. parturition.
 - B. gestation.
 - C. ovulation.
 - D. estrus.
7. Which of the following diseases in swine would present with difficulty breathing, high fever, and reluctance to move?
- A. erysipelas
 - B. dysentery
 - C. brucellosis
 - D. pneumonia
8. A catfish farmer has just marketed a crop of catfish. After preparing the growing facilities for replacements, which of the following types of replacement stock should the farmer purchase to replenish the facility?
- A. broodstock
 - B. fingerlings
 - C. spawn
 - D. larvae
9. When giving an injection, which of the following is the best method for restraining cattle?
- A. applying hobbles to the feet
 - B. using a control halter and nose twitch
 - C. placing the animal in a squeeze chute
 - D. catching the animal in a head gate
10. Which of the following layers of a typical soil horizon contains the most plant nutrients?
- A. A horizon
 - B. B horizon
 - C. C horizon
 - D. R horizon

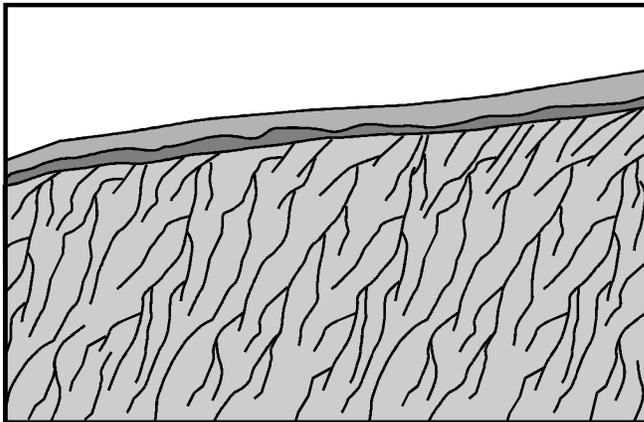
11. In which of the following areas of agriculture are slow-release fertilizers most often used?

- A. citrus
- B. vegetables
- C. lawn care
- D. row crops

12. Which of the following soil and water conservation techniques has the additional benefit of reducing pest infestation?

- A. cover cropping
- B. rotating crops
- C. double cropping
- D. mulching crops

13. Identify the type of soil erosion illustrated in the following diagram.



- A. sheet
- B. gully
- C. rill
- D. splash

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14. Which of the following taxonomic terms describes a group of plants that have the same or similar characteristics and will consistently produce plants of the same type when interbred?
- A. order
 - B. family
 - C. genus
 - D. species
15. Harvested fruits are most likely to remain fresh longer if they are kept in an environment that has
- A. increased levels of ethylene.
 - B. decreased levels of nitrogen.
 - C. increased levels of carbon dioxide.
 - D. decreased levels of oxygen.
16. At which of the following periods in the production cycle of a plant is the need for water greatest?
- A. germination
 - B. early growth
 - C. fruit development
 - D. harvest
17. Postconsumer materials that will decompose in a landfill through bacterial action are referred to as
- A. recyclable.
 - B. renewable.
 - C. sustainable.
 - D. biodegradable.
18. The use of agricultural biomass byproducts, such as switchgrass or wood chips, to produce alternatives to gasoline involves the conversion of which of the following materials into ethanol?
- A. cellulose
 - B. oil
 - C. sugar
 - D. protein

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19. Which phase of the hydrological cycle involves the transition of water from vapor to liquid?
- A. transpiration
 - B. evaporation
 - C. precipitation
 - D. condensation
20. What is the primary source of water used for agriculture purposes in Florida?
- A. aquifers
 - B. springs
 - C. streams
 - D. lakes
21. Where two plant communities intersect to form a forest ecotone or edge,
- A. nonnative species are not present.
 - B. forest succession begins.
 - C. diversity of wildlife habitat increases.
 - D. fewer diseases and insects exist.
22. Which of the following is one potential consequence of the overuse of Florida aquifers as a source of water for agriculture?
- A. intrusion of saltwater from the adjacent ocean
 - B. contamination of the municipal water supplies from leaching
 - C. increased levels of runoff into lakes and streams
 - D. reduction of the infiltration rate of surface water
23. Which agricultural product contributes most to Florida's economy?
- A. tomatoes
 - B. strawberries
 - C. citrus
 - D. corn

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24. Which of the following is the best example of a production decision that maximizes the price of a commodity in low supply?
- A. purchasing protein supplements for feeder cattle
 - B. processing surplus oranges into frozen orange juice
 - C. timing the planting of strawberries for an early harvest
 - D. increasing the number of turkeys marketed in November
25. Which of the following supervised agricultural experiences will most likely help develop communication skills?
- A. placement—selling nursery plants to the public
 - B. placement—school laboratory
 - C. entrepreneurship—fruit production
 - D. entrepreneurship—ranch of 100 cows
26. Which of the following is a mission of a local FFA alumni chapter?
- A. establishing the program of activities for an FFA program
 - B. evaluating the advisor of an FFA program
 - C. hiring new teachers for an FFA program
 - D. supporting and helping to finance an FFA program
27. A select group of business, community, and school stakeholders who provide input regarding the planning, development, and evaluation of an agricultural education program make up the local
- A. alumni chapter.
 - B. civic group.
 - C. advisory council.
 - D. school board.
28. Identify the act of Congress that originally promoted and provided funds for vocational agriculture education courses.
- A. Morrill Act
 - B. Hatch Act
 - C. Smith-Hughes Act
 - D. Perkins Act

29. Who is credited with discovering the effects of genetics on plant characteristics while experimenting with garden peas?

- A. Alexander Fleming
- B. Ian Wilmut
- C. Francis Crick
- D. Gregor Mendel

30. Which of the following Florida crops is a legume?

- A. corn
- B. peanut
- C. tomato
- D. carrot

Answer Key

Question Number	Correct Response	Competency
1.	A	1
2.	A	1
3.	A	1
4.	D	1
5.	A	1
6.	D	2
7.	D	2
8.	B	2
9.	C	2
10.	A	3
11.	C	3
12.	B	3
13.	C	3
14.	D	4
15.	D	4
16.	C	5
17.	D	6
18.	A	6
19.	D	6
20.	A	6
21.	C	6
22.	A	6
23.	C	7
24.	C	7
25.	A	7
26.	D	8
27.	C	8
28.	C	8
29.	D	9
30.	B	10



Annotated Bibliography

The annotated bibliography that follows includes basic references that you may find useful in preparing for the exam. Each resource is keyed to the competencies and skills found in Section 4 of this guide.

This bibliography is representative of the most important and most comprehensive texts as reflected in the competencies and skills. The Florida Department of Education does not endorse these references as the only appropriate sources for review; many comparable texts currently used in teacher preparation programs also cover the competencies and skills that are tested on the exam.

1. Biondo, R. J., & Schroeder, C. B. (2003). *Introduction to landscaping: Design, construction, and maintenance* (3rd ed.). Danville, IL: Interstate Publishers.

Introduces various aspects of the landscape industry from a horticultural perspective. Emphasizes plant selection and care, and contains information on landscape design, construction, and maintenance. Useful for review of competency 3.

2. Brase, Terry. (2005). *Precision Agriculture*. Delmar Cengage Learning.

Provides an overview of precision farming concepts and the tools of precision farming. Covers methods of using spatial analysis in decision making and ways of modeling prescription maps for variable rate applications, soil amendments, pesticides, and herbicides. Useful for review of competencies 3 and 4.

3. Burton, L. D. (2003). *Fish & wildlife: Principles of zoology and ecology* (2nd ed.). Albany, NY: Delmar Thomson Learning.

Puts the principles of biology in the context of the relationship of science to the survival of fish and wildlife. Integrates the principles of zoology and ecology with the lives of wild animals in North America and includes descriptions of the lives, structures, growth, and classification of species in their natural habitats. Useful for review of competency 2.

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4. Camp, W. G., & Daugherty, T. B. (2002). *Managing our natural resources* (4th ed.). Albany, NY: Delmar Thomson Learning.

Explores issues in agriculture and natural resources, including topics such as solid waste disposal and wetland preservation. Also includes information on career opportunities related to agricultural and environmental issues. Case studies explore some of the more difficult issues in resource management and conservation. Useful for review of competency 6.

5. Cooper, E. L., & Burton, L. D. (2007). *Agriscience: Fundamentals & applications* (4th ed.). Albany, NY: Delmar Thomson Learning.

Addresses environmental technology, plant sciences, integrated pest management, interior and exterior plantscapes, animal science, food science, and agribusiness. Also includes information about integrating science into agricultural curriculum and introduces National FFA Organization programs related to agriscience and technology. Useful for review of competencies 2, 3, 4, 5, 6, 9, and 10.

6. Coyne, M. S., & Thompson, J. A. (2006). *Fundamental soil science*. Albany, NY: Delmar Thomson Learning.

Relates basic soil concepts to practical experience. Examines soils as dynamic, living, natural resources. Emphasizes the physical, chemical, and biological properties of soil. Useful for review of competency 3.

7. Cunningham, M., & Acker, D. (2001). *Animal science and industry* (6th ed.). Upper Saddle River, NJ: Prentice Hall.

Emphasizes the principles of animal science and their relationship to livestock and poultry production. Focuses on biological principles of animal function and management; characteristics of animal species production systems; production of high-quality animal products; the use of the horse for work and pleasure; and systems and concepts in the marketing of animals and the processing of animal products. Useful for review of competency 2.

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8. Drummond, H. E., & Goodwin, J. W. (2004). *Agricultural economics* (2nd ed.). Upper Saddle River, NJ: Prentice Hall.

Provides an overview of the food system, with an emphasis on the links between financial institutions, the macroeconomy, world markets, government programs, farms, agribusinesses, food marketing, and the environment. Takes a macro-to-micro approach to illustrate the economic concepts of supply and demand, opportunity cost, diminishing returns, marginality, measuring of costs and returns, and the externalities of transactions. Useful for review of competency 7.
 9. Gillespie, J. R., & Flanders, F. (2004). *Modern livestock & poultry production* (7th ed.). Clifton Park, NY: Delmar Thomson Learning.

Covers all types of farm animals and provides detailed information on each species. Specifics for each species include information on the characteristics of the industry, breeds, selection of breeding stock, feeding and management, common diseases and parasites, and marketing principles. Also explores current issues such as animal rights and animal welfare, food safety, environmental issues, and biotechnology. Useful for review of competency 2.
 10. Herren, R. V. (2004). *The science of agriculture: A biological approach* (2nd ed.). Albany, NY: Delmar Thomson Learning.

Approaches agricultural science from a biological perspective. Topics include environmental concerns, food spoilage and safety, the life processes of plants and animals, and how attention to these concepts increases efficiency in agricultural production. Also discusses new directions in agriculture and agricultural career choices. Useful for review of competencies 1, 2, 3, 4, 6, 9, and 10.
 11. Herren, R. V., & Cooper, E. L. (2002). *Agricultural mechanics: Fundamentals & applications* (4th ed.). Albany, NY: Delmar Thomson Learning.

Provides instruction on basic mechanical skills and applications, as well as information about career opportunities. Topics include tool identification and maintenance, small engines, electricity, electronics, and construction and masonry. Useful for review of competency 5.

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12. Jackson, N. S., Greer, W. J., & Baker, J. K. (2000). *Animal health* (3rd ed.). Danville, IL: Interstate Publishers.

Provides basic information on animal health and disease prevention. Aims to enable animal owners to play an effective role in the prevention of disease in farm animals. Useful for review of competency 2.
 13. Kohls, R. L., & Uhl, J. N. (2002). *Marketing of agricultural products* (9th ed.). Upper Saddle River, NJ: Pearson Prentice Hall.

Uses economic, marketing, and institutional approaches to introduce the facts, principles, and values involved in agricultural marketing. Includes contemporary issues such as biotechnology, direct farmer marketing, risk management, and the growing role and effective use of the Internet in the industry. Useful for review of competency 7.
 14. Lee, J. S., Hutter, J., Rudd, R., Westrom, L., Patrick, A. R., & Bull, A. M. (2004). *Introduction to livestock & companion animals* (3rd ed.). Upper Saddle River, NJ: Pearson Prentice Hall.

Explores veterinary technology, management techniques, and biotechnology in the animal agriculture industry. Introduces traditional production agriculture practices and the biology of animal growth and development. Includes information on animal anatomy, physiology, nutrition, health, reproduction, and biotechnology. Useful for review of competency 2.
 15. Lee, J. S., Patrick, A. R., Vaughn, R., Vaughn-Randel, S., & Murphy, E. (2003). *Agriscience discovery*. Danville, IL: Interstate Publishers.

Introduces the connection between science and agricultural concepts such as natural resources and the environment. Focuses on the application of science concepts through agricultural practice and the use of science to meet the needs of the world's inhabitants. Useful for review of competencies 2, 3, 4, 5, 6, 9, and 10.
 16. Morgan, E. M., Lee, J. S., & Wilson, E. (2004). *Agriscience explorations* (3rd ed.). Upper Saddle River, NJ: Pearson Prentice Hall.

An introduction to the agriculture industry. Includes information on mechanical areas as well as career skills and leadership development. Useful for review of competencies 1 and 5.

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17. National Council for Agricultural Education, & National FFA Organization. (2002). *A guide to local program success* (2nd ed.). Indianapolis, IN: Authors.

Introduces Local Program Success, a national initiative to build quality agricultural education programs. Includes tools and strategies developed by teachers and other agricultural education professionals to help strengthen local programs. Useful for review of competency 8.
 18. National FFA Organization. (2005). *National FFA agriscience handbook*. Indianapolis, IN: Author.

Aims to help teachers and students develop supervised agriculture experience programs, to supplement the instruction of agriscience teachers and FFA advisors, and to provide guidance in completing applications for various FFA events, scholarships, and awards. Useful for review of competencies 7 and 8.
 19. Nelson, G. (2003). *Florida's best native landscape plants: 200 readily available species for homeowners and professionals*. Gainesville, FL: University Press of Florida.

Provides technical information on the design and maintenance of Florida gardens and landscapes using native plants. Details provided for each species include size and form, uses for landscaping or gardening, best features, range and distribution, physical appearance, culture, best companion plants, allergenic properties, cultivars, and similar species. Useful for review of competency 4.
 20. Olson, S. M., & Simonne, E. (Eds.). (2007). *Vegetable production guide for Florida*. Gainesville, FL: University of Florida, Institute of Food and Agricultural Sciences.

Covers all aspects of vegetable production in Florida. Includes information on soil management, fertilizer use, selection of plants, pest control, worker protection, weed management, disease management, and the harvesting, handling, and marketing of crops. Useful for review of competency 4.

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21. Parker, R. O. (2002). *Aquaculture science* (2nd ed.). Albany, NY: Delmar Thomson Learning.
Covers the history, potential, descriptions, management, feeding, marketing, and diseases of aquatic animals and plants, as well as water and chemistry requirements for successful aquaculture. Offers information on careers in the aquaculture industry and includes information on chemistry, biology, and anatomy and physiology. Useful for review of competency 2.
 22. Parker, R. O. (2003). *Introduction to food science*. Albany, NY: Delmar Thomson Learning.
Includes sections on basic chemistry and nutrition, food composition and preservation, environmental concerns, and world food needs. Also includes information on career opportunities in food science industries. Useful for review of competency 10.
 23. Parker, R. O. (2008). *Equine science* (3rd ed.). Clifton Park, N.Y.: Delmar Thomson Learning.
Contains numerous tables, graphs, charts, and lists of critical information. Includes a comprehensive glossary and chapters on the horse industry, breeds and types of horses, and equine anatomy. Useful for review of competency 2.
 24. Phipps, L. J., Osborne, E. W., Dyer, J. E., & Ball, A. L. (2008). *Handbook on agricultural education in public schools* (6th ed.). Clifton Park, NY: Delmar Thomson Learning.
Addresses effective middle school and high school agricultural education in the context of national educational trends and policies. Emphasizes approaches to developing and delivering agricultural education programs, with a focus on strategies for enhancing learning in the core subjects, experiential learning, laboratory instruction, and problem solving. Useful for review of competency 8.
 25. Plaster, E. J. (2003). *Soil science and management* (4th ed.). Albany, NY: Delmar Thomson Learning.
Approaches soil science from the perspective of humans' interaction with soils, examining the essentials of soil science for farmers, horticulturists, environmentalists, and others. Emphasizes management and sustainable use of soils and water and includes information on nutrient management, best practices, and relevant legal issues and government programs. Useful for review of competency 3.

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26. Porter, L., Lee, J. S., Turner, D. L., & Hillan, M. (2003). *Environmental science and technology* (2nd ed.). Upper Saddle River, NJ: Pearson Prentice Hall.
- Promotes foundational knowledge of scientific topics that influence the condition of the environment. Has a strong basis in the physical sciences and in the scientific principles that affect natural resources. Useful for review of competency 6.
27. Powers, L.E., & MacSorley, R. (2000). *Ecological principles of agriculture*. Albany, NY: Delmar Thomson Learning.
- Introduces ecological principles and the practical application of these principles in agriculture. Aims to help readers understand the ecological processes inherent in agricultural systems as well as their implications for agricultural management. Useful for review of competency 6.
28. Ricketts, C. (2003). *Leadership: Personal development and career success* (2nd ed.). Albany, NY: Delmar Thomson Learning.
- Emphasizes training for leadership, personal development, and career selection and success. Explores the relationship of learning styles and personality types to career choices. Includes rules and score sheets for career development related to FFA Creed speaking, public speaking, and parliamentary procedure. Useful for review of competency 1.
29. Ricketts, C., & Rawlins, N. O. (2001). *Introduction to agribusiness*. Albany, NY: Delmar Thomson Learning.
- Details the fundamental principles and applications of agribusiness. Topics include commodity marketing, international agriculture marketing, and food and fiber processing channels. Discusses employment opportunities, and includes information on starting, running, and managing an agribusiness. Useful for review of competency 7
30. Talbert, B. A., Vaughn, R., & Croom, D. B. (2005). *Foundations of agricultural education*. Caitlin, IL: Professional Educators Publications.
- A foundational handbook that introduces the elements necessary to be a teacher of agricultural education. Explores current content, terminology, practices, and theory while providing information on the historical and philosophical foundations of agricultural education. Useful for review of competency 8.

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31. Theiman, W. J., & Palladino, M. A. (2008). *Introduction to Biotechnology* (2nd ed.). San Francisco: Benjamin Cummings.

Provides coverage of basic molecular biology and applications of biotechnology. Includes sections on genes and genomes, recombinant DNA technology, forensic analysis and applications in agriculture and medicine. Useful for review of competency 9.



Additional Information

Please visit the following Web site to review FTCE registration details and to find additional FTCE information, including test locations and passing scores.

www.fldoe.org/accountability/assessments/postsecondary-assessment/ftce/

