



## LOUISIANA AGRITECHNOLOGY 3.0 STUDY GUIDE

Agritechnology certifies that individuals have a knowledge and skill set applicable to entry level positions in the agricultural industry.

Standard	Description	Resource	Weight
4	Describe the history of agriculture and its influence on the global economy	Agriscience Fundamentals & Applications, 5th Edition: Unit 1, Unit 2 & Unit 4	3%
5	Practice agriscience safety skills and procedures	Agricultural Mechanics Fundamentals & Applications, 6th Edition: Unit 4 & Unit 5 Agriscience Fundamentals & Applications, 5th Edition: Unit 14 & Unit 32	5%
6	Apply scientific and technological principles to agriscience issues	Agriscience Fundamentals & Applications, 5th Edition: Unit 3, Unit 15, Unit 16 & Unit 28	4%
7	Apply environmental principles to the agricultural industry	Agriscience Fundamentals & Applications, 5th Edition: Unit 7, Unit 8, Unit 9, Unit 10 & Unit 11	5%
8	Investigate and utilize basic scientific skills and principles in plant science	Agriscience Fundamentals & Applications, 5th Edition: Unit 13, Unit 14, Unit 15, Unit 16, Unit 17, Unit 19, Unit 21 & Unit 22	5%
9	Investigate and utilize basic scientific skills and principles in animal science	Agriscience Fundamentals & Applications, 5th Edition: Unit 26, Unit 27, Unit 28, Unit 29, Unit 30 & Unit 31	5%
10	Demonstrate the use of agriscience tools, equipment, and instruments	Agricultural Mechanics Fundamentals & Applications, 6th Edition: Unit 7, Unit 8, Unit 30, Unit 31, Unit 39	4%
11	Demonstrate agribusiness, employability and human relation skills	Agriscience Fundamentals & Applications, 5th Edition: Unit 5 & Unit 6	4%
12	Apply leadership and citizenship skills	Agriscience Fundamentals & Applications, 5th Edition: Unit 6	5%
13	Explore the scope of the agriscience industry	Agriscience Fundamentals & Applications, 5th Edition: Unit 4	3%
14	Provide for proper animal health and nutrition	Agriscience Fundamentals & Applications, 5th Edition: Unit 26 & Unit 27; FarmASyst PDF (NC State Extension): Pages 1, 5, 6, 11, 14 & 15	2%
15	Identify procedures in animal production and reproduction	Agriscience Fundamentals & Applications, 5th Edition: Unit 26, Unit 27, Unit 28, Unit 29, Unit 30 & Unit 33	4%
16	Develop procedures for exhibiting animals	Agriscience Fundamentals & Applications, 5th Edition: Unit 34; Oklahoma Cooperative Extension Service, Beef Showmanship, ANSI-3684-2; Oklahoma Cooperative Extension Service, Beef Showmanship, ANSI-3684-3; Oklahoma Cooperative Extension Service, Beef Showmanship, Page 118.2; & Oklahoma Cooperative Extension Service, Sheep Showmanship, Page 655.2	2%
17	Compare, select, and use plant production systems	Agriscience Fundamentals & Applications, 5th Edition: Unit 17, Unit 18, Unit 19, Unit 20 & Unit 21	3%
18	Investigate proper methods to fertilize plants and crops	Agriscience Fundamentals & Applications, 5th Edition: Unit 9 & Unit 19	2%
19	Operate, maintain, and service facilities, tools, and equipment	Agricultural Mechanics Fundamentals & Applications, 6th Edition: Unit 4, Unit 14, Unit 16, & Unit 31	3%
20	Apply principles of agribusiness finance	Agriscience Fundamentals & Applications, 5th Edition: Unit 35 & Unit 36	4%
21	Students evaluate the importance of the food and fiber system to understand the impact on global economy	Agriscience Fundamentals & Applications, 5th Edition: Unit 8, Unit 32 & Unit 34	2%
22	Students examine the scope of career opportunities in and the importance of agriculture to the economy	Agriscience Fundamentals & Applications, 5th Edition: Unit 1, Unit 4, Unit 34, Unit 35 & Unit 36	3%
26	Analyze the scope of the agriscience industry	Leadership: Personal Development and Career Success,	2%

		3rd Edition: Chapter 21, Chapter 22	
<b>27</b>	Recommend steps for proper animal health and nutrition	Agriscience Fundamentals & Applications, 5th Edition: Unit 26 & Unit 27	<b>3%</b>
<b>28</b>	Select, and use plant production systems	Agriscience Fundamentals & Applications, 5th Edition: Unit 21	<b>2%</b>
<b>29</b>	Fertilize plants and crops	Agriscience Fundamentals & Applications, 5th Edition: Unit 8, Unit 9, Unit 16, & Unit 21	<b>4%</b>
<b>30</b>	Irrigate plants and crops	Agriscience Fundamentals & Applications, 5th Edition: Unit 19 & Unit 38	<b>4%</b>
<b>31</b>	Control plant pests	Agriscience Fundamentals & Applications, 5th Edition: Unit 13 & Unit 21; Agricultural Mechanics, 6th Edition: Unit 5	<b>4%</b>
<b>32</b>	Maintain, and service facilities, tools, and equipment	Agricultural Mechanics, 6th Edition: Unit 3, Unit 4, Unit 6, Unit 15, & Unit 21	<b>2%</b>
<b>33</b>	Describe procedures for harvesting and marketing agricultural products	Agriscience Fundamentals & Applications, 5th Edition: Unit 32 & Unit 34	<b>4%</b>
<b>34</b>	Compare principles of agribusiness finance	Agriscience Fundamentals & Applications, 5th Edition: Unit 36	<b>3%</b>
<b>35</b>	Explain the components of the American business system	Agriscience Fundamentals & Applications, 5th Edition: Unit 36	<b>2%</b>
<b>36</b>	Investigate agricultural cooperatives structure and function	Agriscience Fundamentals & Applications, 5th Edition: Unit 36	<b>2%</b>

## AGRISCIENCE FOUNDATIONS (YEAR 1)

### STANDARD 4

### 3 QUESTIONS

Students should be familiar with the history of agriculture including but not limited to technological advancements.

*Sample Question: What metal revolutionized agriculture?*

Students should know the impact that agriculture has on the local, state, national and global economy.

- This includes statistics related to the number of farmers, how much food farmers produce, careers in agriculture, etc.

*Sample Question: For every dollar spent on food, what percent of that dollar is returned to the producer?*

### STANDARD 5

### 5 QUESTIONS

Students should be able to identify potential accidents in agriculture and know how to prevent accidents through the use of personal safety equipment and clothing.

*Sample Question: When discharging a fire extinguisher, how far away should you be positioned from the fire?*

Students should know basic pesticide safety information including how to read a Material Safety Data Sheet (MSDS) and how to properly dispose of hazardous waste materials.

*Sample Question: What is another term for the trade name of a pesticide?*

### STANDARD 6

### 4 QUESTIONS

Students should be able to use common laboratory equipment and employ scientific measurement skills.

*Sample Question: Approximately how many grams are equal to one pound?*

Students should be able to identify the parts and functions of plant and animal cells as well as describe the phases of cell reproduction.

*Sample Question: What is mitosis?*

Students should be able to carry out agriscience research including interpreting, analyzing and reporting data.

*Sample Question: What are the steps of the Scientific Method?*

Students should be familiar with DNA, genetic applications in agriscience and advances in biotechnology.

*Sample Question: What type of breeding involves choosing specific parents to desirable characteristics in the offspring?*

**STANDARD 7****5 QUESTIONS**

Students should know how different climatic and geological activity influences agriculture.

*Sample Question: The buildup of heat caused by radiant energy being trapped in the earth's atmosphere is known as what?*

Students should be able to describe ecosystems and environmental resources related to agriculture production.

*Sample Question: Air is what percent oxygen?*

Students should be able to identify regulatory agencies, apply Best Management Practices and conservation practices related to agriculture and natural resources.

*Sample Question: What is meant by crop rotation?*

**STANDARD 8****5 QUESTIONS**

Students should know the following concepts related plant science/growth:

- Plant categories
- Plant parts
- Photosynthesis
- Respiration
- Reproduction
- Nutrients required for growth

*Sample Question: What is the series of processes in which light energy is converted into simple sugar called?*

Students should be able to analyze a fertilizer label.

*Sample Question: What do the three numbers found on a fertilizer label represent?*

Students should be familiar agricultural pests and pest control solutions.

*Sample Question: What type of pesticide is used to kill insects?*

**STANDARD 9****5 QUESTIONS**

Students should know the following concepts related animal science:

- Animal categories (use, type, breed, scientific classification)
- Terminology
- Internal & External anatomy
- Animal management
- Animal health
- Animal safety

*Sample Question: What is the name of the class of animals that have a stomach with four compartments?*

*Sample Question: Where is an intramuscular injection made?*

Students should be aware of animal welfare issues.

*Sample Question: What is the difference between animal welfare and animal rights?*

Students should know the food, fiber and by-products provided by animals.

*Sample Question: What are some common by-products of the animal industry?*

**STANDARD 10****4 QUESTIONS**

Students should be able select, service and maintain and use agriscience tools, equipment and instruments.

*Sample Question: When gripping wood, metal or plastic what type of tool would you use?*

Students should know various physical science principals as applied in mechanical applications including but not limited to:

- levers
- pulleys
- hydraulics
- internal combustion

*Sample Question: A round device attached to a shaft and driven by a belt is know as what?*

Students should be able to solve mathematical problem in agriscience including but not limited to:

- distance
- area
- volume
- proportion
- percentage

*Sample Question: What is the U.S. standard unit of measurement when measuring the length of a piece of wood?*

**STANDARD 11****4 QUESTIONS**

Students should know how to develop, implement and maintain an SAE including using a record keeping system.

*Sample Question: A student who's Supervised Agricultural Experience (SAE) involves owning their own herd of cattle has what type of SAE?*

Students should have an understanding of oral communication, written communication nonverbal communication and good listening skills.

*Sample Question: What are the three parts of a speech?*

**STANDARD 12****5 QUESTIONS**

Students should be able to identify and describe leadership characteristics and opportunities to acquire leadership skills.

*Sample Question: What is another word for integrity?*

Students should be able to conduct meetings using correct parliamentary procedure.

*Sample Question: What does two taps of the gavel mean?*

Students should be aware of opportunities available through the National FFA Organization.

*Sample Question: What is the highest degree that the FFA can bestow upon a member?*

## AGRITECHNOLOGY 1 (YEAR 2)

### STANDARD 13

### 3 QUESTIONS

Students should be familiar with the career areas within the agricultural industry, including basic job descriptions.

*Sample Question: What jobs fall within the natural resources agricultural career area?*

Students should be familiar with preparation requirements for various agriscience careers, including educational requirements.

*Sample Question: The average U.S. farmer produces enough food to feed approximately how many people?*

Students should be familiar with basic statistics regarding agricultural employment in the American economy.

*Sample Question: What percent of the workforce is employed in Agriculture?*

### STANDARD 14

### 2 QUESTIONS

Students should be able to explain requirements for proper animal nutrition, and select appropriate feed and supplement sources to meet nutritional requirements.

*Sample Question: What is a major source of carbohydrates for livestock?*

Students should know common sanitation and waste disposal methods used in livestock production.

*Sample Question: What practices are used to prevent mastitis in dairy cattle?*

### STANDARD 15

### 4 QUESTIONS

Students should know the following concepts related to animal production and reproduction:

- Livestock anatomy, including major organs and body systems
- Commercially important breeds of animals
- Products obtained from various livestock breeds
- Methods of livestock reproduction and associated terminology
- Techniques for approved care of newborn animals
- Methods of animal identification
- Methods of animal restraint

*Sample Questions: What is the function of the circulatory system in the body?*

*A Holstein is a breed of what type of animal? What tool is used to restrain beef cattle from moving while receiving an injection?*

**STANDARD 16****2 QUESTIONS**

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Students should know the proper tools and procedures used in showing livestock.

*Sample Question: What is the use of a livestock cane when showing swine?*

Students should be familiar with proper methods for transporting livestock and why they are important.

*Sample Question: What factors can help to reduce stress on cattle when being transported?*

Students should be able to identify appropriate evaluation criteria for animals.

*Sample Question: In beef, what is a yield grade used to estimate?*

**STANDARD 17****3 QUESTIONS**

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Students should be able to explain plant propagation methods, including sexual and asexual reproduction.

*Sample Question: What is the function of flowers in sexual plant reproduction?*

Students should be able to explain the processes involved in preparing for, planting, maintaining, and harvesting row crops.

*Sample Questions: What conventional method can be used to control insect damage to field crops? What equipment is generally used to loosen and prepare soil for planting?*

Students should be able to categorize commercially important plants according to biology, including life cycle.

*Sample Question: What term describes a plant that persists for many growing seasons?*

Students should be able to identify methods of pruning plants to achieve desired growth and health.

*Sample Question: How should orange trees be pruned?*

**STANDARD 18****2 QUESTIONS**

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Students should be able to interpret information on a fertilizer label.

*Sample Question: What do the three numbers on a fertilizer label represent?*

Students should be able to compare sources and forms of nutrients.

*Sample Question: What materials can be used to make organic fertilizer?*

Students should be able to select the appropriate method of applying fertilizer depending on the setting, plant variety, and age of plants.

*Sample Question: What is a common method of fertilizer application for home vegetable gardens?*

**STANDARD 19****3 QUESTIONS**

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Students should be able to identify, use and maintain hand tools and power equipment. This includes use of appropriate safety equipment.

*Sample Question: What type of saw can be used to cut irregular shapes?*

Students should be able to identify make appropriate decisions for maintaining and servicing small gas engines.

*Sample Question: What does the marking SAE 10W-30 on a bottle of engine oil indicate?*

**STANDARD 20****4 QUESTIONS**

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Students should be able to identify major sources of credit for agribusiness, including lending institutions and types of loans available.

*Sample Question: For what purpose might a farmer take out a short-term loan?*

Students should be familiar with information necessary to complete a loan application.

Students should know the function of agribusiness financial records and associated terminology.

Students should be able to explain basic economic principles (laws) as they apply to agribusiness.

*Sample Question: What is the Law of (Increasing) Opportunity Cost?*

**STANDARD 21****2 QUESTIONS**

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Students should be familiar with the agriculture industry's impact on the US gross national product and the total global economy.

- This includes statistics related to consumer spending on food, where the food dollar goes (how it is spent), jobs in agricultural industry, etc.

*Sample Question: For every dollar spent on food, what percentage of that dollar goes towards transportation costs?*

Students should be able to identify and describe the function of US government agencies involved in agriculture.

*Sample Question: What government agency oversees meat quality grading?*



## STANDARD 22

## 3 QUESTIONS

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Students should be familiar with basic statistics regarding agricultural employment and food production.

Students should be able to identify agribusiness career opportunities available.

*Sample Question: What would be the job description of someone who works in agribusiness marketing?*

Students should be able describe basic organizational structures important in the agricultural economy.

*Sample Question: What is the difference between a cooperative and a partnership?*

Students should be familiar with ways in which managers make decisions for their agribusinesses.

- This includes setting goals, making financial decisions, etc.

*Sample Question: What two types of plans do managers make when setting goals and objectives for their agribusiness?*

## AGRITECHNOLOGY 2 (YEAR 3)

### STANDARD 26

### 2 QUESTIONS

Students should be familiar with the function and benefits of professional and trade organizations.

*Sample Question: Professional and trade organizations often provide what types publications?*

Students should be familiar with all parts of the job application process.

- This includes steps in the job application process, parts of a job application, resources available for completing a job application, common mistakes in the application process, etc.

*Sample Question: Which is the MOST common cause for a job application to be eliminated from consideration?*

### STANDARD 27

### 3 QUESTIONS

Students should be familiar with the nutritional requirements of animals.

- This includes:
  - methods of animal feeding
  - formulating feed rations
  - the function of all major classes of nutrients in their diets
  - consequences of nutrient deficiency

*Sample Question: What are the functions of carbohydrates in the diet of a ruminant?*

Students should be familiar with common animal pests, diseases and disorders.

- This includes:
  - methods for their prevention and treatment
  - correct uses of pesticides, medications, and other additives
  - tools for administering medications and other additives

*Sample Question: What factors should be considered before administering medication to a meat or dairy animal?*

Students should know how to select and apply growth stimulators and implants.

*Sample Question: What device is used to place a pill in an animal's throat?*

### STANDARD 28

### 2 QUESTIONS

Students should be able to describe the following:

- methods of preparing and protecting seedbeds
- equipment used for preparing and planting seedbeds

*Sample Questions: What type of planting is a broadcast seeder used for?*

**STANDARD 29****4 QUESTIONS**

Students should be able to explain important soil characteristics (structure, organic matter, pH, water-holding capacity, etc.), and their effect on plant growth and development. This includes methods of improving soil characteristics.

*Sample Question: What amendments can be added to soil to change the soil's acidity or alkalinity?*

Students should be familiar with basic soil fertility concepts. This includes:

- listing elements essential for proper plant growth
- explaining how soil can be amended to improve fertility
- identifying common nutrient-deficiency symptoms in plants

*Sample Question: What macronutrients are essential for proper plant growth and development?*

Students should be able to identify environmental causes of soil loss and degradation, and explain methods for preventing soil loss.

*Sample Question: What soil preparation practices can be used to prevent erosion?*

**STANDARD 30****4 QUESTIONS**

Students should be familiar with basic principles of irrigating plants and crops. This includes:

- irrigation terminology
- plant conditions indicating irrigation needs

*Sample Question: When are the irrigation needs of pasture grasses the greatest?*

Students should be able to compare and contrast methods of irrigation. This includes:

- benefits/drawbacks of different irrigation methods
- the equipment used for different irrigation methods

*Sample Question: Which method of irrigation should be utilized when water conservation is the most important factor to consider?*

**STANDARD 31****4 QUESTIONS**

Students should be familiar with plant pests and the damage they cause, including insect pests and weeds. Students should be familiar with the life cycles of insects, pests, and diseases.

*Sample Question: What are the stages of complete metamorphosis?*

Students should be able to describe biological, chemical and cultural methods of controlling plant pests.

*Sample Question: What type of pest control is being performed when ladybugs are released to control aphids on a crop?*

Students should be able to explain the proper use and storage of pesticides. This includes reading and interpreting a pesticide label.

*Sample Question: What is the best method of storing pesticides?*

**STANDARD 32****2 QUESTIONS**

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Students should be able to identify, use and maintain hand tools and power equipment. This includes use of appropriate safety equipment.

*Sample Questions: What is the proper procedure for replacing the blade on a table saw? What type of safety equipment should be worn when welding with an oxy-acetylene torch?*

**STANDARD 33****4 QUESTIONS**

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Students should be able to explain the steps in harvesting various crops using appropriate terminology.

Students should be able to identify potential harvest problems.

*Sample Question: What effect can fungi have on recently harvested crops?*

Students should be familiar with methods for processing, grading and storing agricultural products.

*Sample Question: What type of environment should tomatoes be stored in prior to sale?*

Students should be able to identify the market outlets for agricultural products. This includes how economic factors influence price and availability of goods sold.

*Sample Question: Which economic factors influence how market prices for a particular crop are set?*

**STANDARD 34****3 QUESTIONS**

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Students should be familiar with the purpose and use of the following agribusiness financial records:

- balance sheets
- budgets
- cash-flow statements
- income statements
- inventory reports
- profit and loss statements

*Sample Question: What is the term for a financial document that records the amount of product kept on hand, how many were sold, each item's cost, total sale, and profit?*

Students should be able to explain the purposes and structures of contracts, leases, deeds, and insurance policies for an agribusiness.

*Sample Question: How are the payments for an amortized loan structured?*

Students should know the advantages and disadvantages of agribusiness entrepreneurship.

*Sample Question: What is a major disadvantage of owning your own agribusiness?*

**STANDARD 35****2 QUESTIONS**

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Students should be able to describe the five basic ways American business is organized. This includes:

- compare and contrast each method of doing business
- list advantages and disadvantages for each method of doing business

*Sample Question: What does the distribution function of business involve?*

## STANDARD 36

## 2 QUESTIONS

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Students should be able to explain the definition of a cooperative and identify examples of cooperatives.

*Sample Question: Which type of cooperative receives products from its members and then resells those products for the best possible price?*

Students should be able to distinguish between the main types of cooperatives and their functions.

*Sample Question: What are the main types of cooperatives?*

Students should be able to list benefits of cooperatives.

*Sample Question: What is an advantage of selling products such as milk through a cooperative?*