April/May: 9-12

Agricultural Careers

South Carolina
Farm to School Lessons

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Overview

Welcome to the South Carolina Farm to School April/May Agriculture Education Lesson. This lesson contains information & hands on activities where 9-12 students will be learning about careers in agriculture. Our goal for this lesson is to help students explore the vast array of agricultural careers.

In order to achieve this goal, the students will research careers in agriculture and design a presentation for K-8 students on their chosen career.

These lessons are designed to be delivered over a four week period, noting that introduction & activities will be supplemental to existing curriculum.
Estimated Total time: 90-120 minutes

Teacher Background[1]

Clustering occupations based on the nature of the work involves studying what people do in the work and relating these observations to the competencies needed to perform the work. Agriculture is divided into six major areas:

- **Production agriculture**: Production agriculture is concerned with raising live- stock, producing livestock products (e.g., milk and eggs), and growing crops. It is often equated with farming and ranching.
- **Supplies and services**: The supplies and services area is concerned with providing the inputs needed to produce livestock, livestock products, and/or crops. Examples of supplies are feed, seed, and fertilizer. Examples of services are custom harvesting, crop consulting, and veterinary medical services.
- **Products processing and marketing**: The products processing and marketing area includes all the activities in processing the crops or livestock produced on farms and getting the products to consumers in their desired forms.
- **Forestry**: Forestry is concerned with the production of trees for various uses, such as lumber, paper, and ornamental products. It includes native forests as well as tree farms.
- **Natural resources**: The natural resources area includes the conservation and protection of water, soil, air, and other natural resources, including wildlife. Environmental science can be included in this area.
- **Agricultural mechanics and technology**: This area includes the manufacture, repair, and operation of tractors, implements, and computer-based systems.

Horticulture is divided into four major areas:

- **Landscape horticulture**: This area includes production nurseries, landscape nurseries, landscape maintenance services, plant and seed producers, retail garden centers/nurseries, and botanical gardens.
- **Floriculture**: This area includes the production, design, and marketing of flowers. Flower growers and marketers, wholesale florists, and retail florists are involved in this area.
- **Fruits, vegetables, and nuts**: This area deals primarily with food products and includes production, processing, packaging, distribution, and advertising.
- **Turfgrass**: This area deals with the use of grasses and other ground covers and includes sod production, turf establishment, and golf course and other turf area design and maintenance.

A professional occupation requires a high level of education and/or experience. Many professional occupations require college degrees at the master's or doctoral level.

- Examples in agriculture: agriculture teacher, veterinarian, agricultural engineer, plant breeder, biotechnologist
- Examples in horticulture: horticulture teacher, landscape architect, plant bio- technologist, vegetable researcher, geneticist

A managerial occupation involves managing an agricultural or horticultural enterprise. A college degree and/or considerable experience may be required. An individual who is a manager has large responsibilities for the success of the enterprise and the welfare of the employees.

- Examples in agriculture: feed mill manager, sawmill manager, fish farm man- ager, ranch manager

• Examples in horticulture: garden center manager, turf farm manager, flower market manager

A technical occupation is one that demands specialized training in performing processes, using equipment, and carrying out activities. Requirements are usually two years of education beyond high school and/or experience.

• Examples in agriculture: veterinary medical assistant, fish farm water-quality technician, food product inspector, farm equipment mechanic

• Examples in horticulture: floral designer, landscape designer, vegetable research technician

A skilled occupation is one that requires specialized education and training. Education beyond high school is often needed for occupational entry. On-the-job training may be particularly important.

• Examples in agriculture: farm equipment mechanic, artificial inseminator, pesticide applicator, livestock buyer

• Examples in horticulture: landscape installer, greenhouse assistant, nursery crop propagator

A semi-skilled occupation is one that requires some education and training and/or on-the-job experience. Semi-skilled occupations may be the entry level for individuals who have just completed training and need time to develop more skills before advancing to skilled occupations.

• Examples in agriculture: farm equipment set-up mechanic, mechanics assistant, warehouse employee, cattle herder

• Examples in horticulture: garden center assistant, packing shed attendant, lawn maintenance assistant

An unskilled occupation is one that requires neither specific education or training nor experience in order to perform the duties. Unskilled occupations are entry-level occupations that often involve considerable manual labor.

• Examples in agriculture: farm laborer, food plant utility person, fertilizer plant mail clerk

• Examples in horticulture: vegetable picker, warehouse worker, greenhouse worker

Information Directly related to SC Agriculture Careers:[2]

The published study of "Economic Impact of the Agribusiness Industry in South Carolina" provides additional information. What is some of the information in the report?

- **Economic Impact - $33.9 billion a year**
- **Labor Income - $7.5 billion a year**
- **Jobs Created and Supported - 200,000**
- **Farm and Forest Land - 17.75 million acres (92% of all the land in SC)**

To examine these numbers further and gain a full understanding of the vitality of agriculture, animal science and horticulture, you may view the entire study at the South Carolina Department of Agriculture website. Lastly, consider these points of consideration in regards to agricultural careers:

• Numerous studies and surveys show that agricultural professionals have a lower unemployment rate than the national average.

• The United States Department of Agriculture reports that between 2010–2015 there will be a shortage of trained graduates to fill jobs available in the agricultural and food systems.

• States around the nation, as in South Carolina, identify agriculture as a vital and important economic engine for the state.

• The problems of tomorrow will produce new areas of opportunity for agricultural science majors, as they produce a greener, healthier, wealthier and tastier future.

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[1] Adapted from: Lesson: Selecting an Agriculture/Horticulture Occupation (www.MYcaert.com)

[2] Adapted from **Agricultural Science Majors Hardly a *Useless* Pursuit:** *Response from Dr. Thomas Scott, Dean College of Agriculture, Forestry and Life Sciences at Clemson University to the January 19, 2012 Yahoo! Education Post: "College Majors that are Useless"*

Lesson checklist

F2S Aim: Increase awareness of agriculture and agribusiness careers.

F2S Objectives

Students will be able to:

* Name and describe the major areas of agriculture/horticulture occupations based on the nature of the work.
* Name and describe the major areas of agriculture/horticulture occupations based on level of education and responsibility.

Materials:

* Agricultural Career Investigation Worksheet (Appendix A)
* Resources (Appendix B)
* Gardening Journal
* Palmetto Pick Activity Materials on page 7-8.
* Gardening Activity Materials on page 8.

National Health Education Standards

There are no Health Education Standards for this lesson.

SC State Standards

E2-2.2	Compare/contrast information within and across texts to draw conclusions and make inferences.
E2-2.4	Create responses to informational texts through a variety of methods (for example, drawings, written works, oral and auditory presentations, discussions, and media productions).
E2-4.1	Organize written works using prewriting techniques, discussions, graphic organizers, models, and outlines.
E2-4.2	Use complete sentences in a variety of types (including simple, compound, complex, and compound-complex).
E2-4.4	Use grammatical conventions of written Standard American English, including • subject-verb agreement, • pronoun-antecedent agreement, • agreement of nouns and their modifiers, • verb formation, • pronoun case, • formation of comparative and superlative adjectives and adverbs, and • idiomatic usage.
E2-4.5	Revise writing to improve clarity, tone, voice, content, and the development of ideas.
E2-4.6	Edit written pieces for the correct use of Standard American English, including the reinforcement of conventions previously taught.
E2-5.5	Create technical pieces (for example, proposals, instructions, and process documentation) that use clear and precise language suitable for the purpose and **audience**.
E2-6.2	Use direct quotations, paraphrasing, or summaries to incorporate into written, oral, auditory, or visual works the information gathered from a variety of research sources.
E2-6.3	Use a standardized system of documentation (including a list of sources with full publication information and the use of in-text citations) to properly credit the work of others.
E2-6.4	Use vocabulary (including Standard American English) that is appropriate for the particular audience or purpose.
E2-6.5	Create written works, oral and auditory presentations, and visual presentations that are designed for a specific audience and purpose.
E2-6.6	Select appropriate graphics, in print or electronic form, to support written works, oral presentations, and visual presentations.
E2-6.7	Use a variety of print and electronic reference materials.

Lesson Essential Components

Lessons profile	Page(s)	Yes	No	Notes
Palmetto Pick of the Month	9	★		Tasting activities with strawberries and/or squash.
Health Education Standards	5		★	
SC-Cross Curricular Standards	6	★		
SC-F2S Behavioral Goals	8	★		
Cooking Activities	9	★		
Tasting Activities	9	★		
Physical Activity	9	★		
Food Safety	9	★		
School Food Garden	8-9	★		
Student to Farmer Connections (i.e. field trips, talks)			★	
Student to Chef Connections			★	
Farm to Cafeteria			★	
Provision of scientific knowledge/rationale			★	
Risk and benefits about healthy behaviors			★	
Obstacles, Barriers & Solution			★	
Family involvement and other supports		★		Family Activity Letter
Set goals and monitoring progress			★	
Other hands on activities:	8	★		Class Activities

✎ Let's Learn!

What is a Food Environment?[1]
Estimated Time: 10 minutes

1. Watch the following video and then discuss with the class the different areas of agricultural careers (see #2 below and Teacher Background):
https://www.youtube.com/watch?v=9acCIRS8ZjQ
2. The agricultural industry is made up of six employment areas. These areas are:

- Production Specialist: 7%
- Social Service Professionals: 9%
- Education and Communication: 11 %
- Managers and Financial Specialists: 13%
- Scientists, Engineers and Related Specialists: 32%
- Marketing, Merchandising and Representatives: 28%

☞ Activity

Agricultural Career Investigation
Estimated Time: 50-80 minutes

1. Draw a food product (i.e. bread or milk) on the board and web the careers involved in getting that food product to the consumers kitchen. Focus on all the research, development, testing, manufacturing and marketing that is involved in making sure that the food product is of good quality and is safe for consumers.
2. Have students select an agricultural career. It is best if there is no overlap. Have them research this career (using the Internet) and fill out the **Career Investigation** (Appendix A) worksheet.
Note: See Appendix B for resources for finding information on agricultural careers.
3. Have students put together a presentation on careers that can be given to students in lower grades. Encourage students to be creative with their presentations to be more interesting for the younger students.
Note: This should be completed over a 2-3 week period. If students are unable to visit students in lower grades, have them present their information and video. Share the video with your local elementary and middle schools.
4. While students work on their research/ presentations, take some time to answer the following questions as a class:

- What are the six occupational areas in the agriculture industry? What areas have the most need for qualified people?
- What percentage of the American working population works in an agriculturally related job?
- What percentage of employed Americans work on the farm?
- Name ten agricultural careers.

Expand the activity:
- To expand this activity, after discussion, have a local representative from each of the six occupational areas come and visit the class giving first hand information about their career choice.

✯ Gardening Activity

Planting a Strawberry Jar OR Planting a Crookneck Squash Seed (You can either choose one of the planting activities or do both)[2]
Estimated Time: 15 minutes

1. **Strawberry Jar- Materials Needed:** Ever-bearing strawberry starts (small plants); Small flower pot or old coffee can (8-10" in diameter, 8" deep);Water for soil in a small spray bottle; Potting Soil.
2. Strawberry Gardening Activity: Tell the children that today they will plant small strawberry plants. Explain to the students the importance of sunlight, soil and the right amount of water for their plants to grow to their full potential. Juicy foods like strawberry needs lots of water so farmers and gardeners will use sprinklers or watering cans in addition to rain to make sure plants have plenty water.
3. Planting Tips: Fill the container 2/3 full of potting soil. Remove the start of the plant from its pot and gently loosen roots. Place the start in a single

container or 8 inches apart in larger containers. Cover with soil and water to moisten but not drench.

OR

1. Crookneck Squash Seed-Materials Needed: Crookneck squash seeds packets; 5 to 6 ounces paper cups one per child; Potting Soil; Unsharpened pencil; Water for soil in a small spray bottle;Plastic spoons one per child; waterproof markers; wooden craft sticks; table covers if desired; sunny location.

2. Crookneck Squash Gardening Activity: Tell the children that today they will plant squash seeds. The seeds need soil, water, light and warmth to grow into plants. The seeds will grow first into very small plants then into larger plants. These larger plants, if planted outside in the garden, will continue to grow with sunlight and water.

3. Planting Tips: Help each child write his/her name on their cup. Help the children fill their cups about 3/4 full of potting soil. Gently tap the sides and bottom of their container with their index finger to settle but not pack the soil. Poke three holes in the soil spaced around the cup. Use the marked unsharpened pencil to make holes 1/2 inch deep. Place a seed in each hole and gently cover the seeds with soil. Light spray water over the top of the soil. If using wooden plant markers, stick one in the soil close to the inside curve of the cup. Have the children set their cups in a sunny spot. Have the children check their cups weekly to see the progress of the seeds growing into plants.

✯ Palmetto Pick Activity

Summer Squash Sandwich OR Strawberry Pizza

Estimated Time: 15 minutes

Ingredients: Summer Squash Sandwich Sensory Exploration

Summer squash, (1-2 inches in diameter),Mozzarella or Cheddar cheese slices, Plates, Napkins

OR

Ingredients: Strawberry Pizza Sensory Exploration

Graham cracker squares (1 for each child), Strawberry-flavored cream cheese, Strawberry slices, Plates, Napkins

Sensory Exploration Activity:

Have students wash their hands (with soap & warm water for 20 seconds) & reinforce that it is important. Show the students that you have washed the squash/strawberries before beginning. Talk about planting summer squashes/strawberries while eating during this taste tasting activity.

Summer Squash Sandwich: Give the child a plate with at least two thin slices of summer squash and one slice of cheese. Tell the children they are going to make a sandwich with summer squash. Allow them to place the cheese between the crookneck squash slices to make a sandwich and have them note the difference in shape and textures. As the children eat their summer squash sandwiches, have them describe how the squash: smells, feels in mouth and tastes

Strawberry Pizza: Give each child a paper plate with cream cheese topped graham cracker. Let child select several slices of strawberry with a spoon or fork. Show the children how to layer the strawberry slices on the cream cheese to make a pizza.As the children eat their strawberry pizzas, have them describe how the strawberry: smells, feels in mouth and tastes.

Note: You may want to have squash/strawberry samples sliced before you begin the PPM Activity. Remember, that you can use the Farm to School grant funds to purchase the materials required for this activity.Additionally, if you need assistance identifying places to purchase SC summer squash or strawberries, feel free to contact your Farm to School Agriculture regional coordinator.

✍ Evaluation

Formal Assessment:

1. Review Food Environments & discuss the ways food ads affect our buying choices.

Informal Assessment: Observe participation in lesson activities. Complete survey at end of month (survey will be sent electronically).

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[1] Adapted from Utah Agriculture in the Classroom: Agricultural Career Investigation - Career Technical Education: Introduction (www.agclassroom.org/ut)

[2] Source: Team Nutrition-United States Department of Agriculture.(2009). Grow it, Try it, Like it! Preschool Fun with Fruits and Vegetables. Booklets 2 & 7.

Resources

Books:Koch P.A., Barton A.C., Contento I.R. (2008). Farm to Table & Beyond. Teachers Columbia University & the National Gardening Association, New York, NY.

Websites:

To request nutrition education materials visit the Clemson University Nutrition and Resource Center (NIRC): www.clemson.edu/**nirc**

Note: The website listed on the worksheet is no longer active. See Appendix B for additional sources for finding information.

Agricultural Career Investigation

Start your Internet search at the Teen Scene, www.agclassroom.org/teen/index.htm.

1. What is the name of this occupation?

2. What duties or responsibilities go along with this job?

3. What skills are needed for this job?

4. What type of personality is needed for this job?

5. What physical requirement or limitations are associated with this job?

6. What educational background is required?

7. What courses, especially in science, should be taken in high school and in college?

8. What is the best type of school to attend to attain the necessary skills?

9. What high school course should be taken to prepare for this position?

10. What are some positive aspects of this job?

11. What are some negative aspects of this job?

12. How does this profession help to better society?

13. What is the demand for people in this position like today?

14. What is the outlook for this job in the future?

Appendix B

Resources on Agricultural Careers

http://www.clemson.edu/cafls/safes/undergraduate/index.html. Each agricultural major has a link"What can I do with this major?".

http://gaaged.org/Careers_in_Agriculture/index.htm. Click on individual career choices to learn more.

http://www.gaaged.org/Games/Agball/multi_agball.swf

https://www.youtube.com/user/ClemsonCAFLS/videos