South Carolina CTE

Agricultural Science and Technology

AGRICULTURAL LITERACY IN AGRISCIENCE AND TECHNOLOGY A

1 Selecting an Agriculture Occupation A.1

1. Name and describe the major areas of agriculture occupations based on the nature of the work A.1
2. Name and describe the major areas of agriculture occupations based on level of employment A.1
3. Identify the factors to consider in selecting an occupation in agriculture A.1

2 Understanding the Importance of Agriculture to Society A.2

1. Discuss modern agricultures role in basic human nutrition A.2
2. List agricultural products used to provide food A.2
3. Identify agricultural products used to provide clothing A.2
4. Identify agricultural products used to provide human shelter A.2

3 Understanding Agriscience and Technology A.3

1. Explain the meaning of agriscience and technology A.3
2. Identify the major areas of agriscience A.3
3. Explain the benefits of research in new areas of agriscience A.3

4 Conducting Agricultural Research A.4

1. Define the research process and some practical applications in agriculture A.4
2. List and explain the five major steps in the scientific method A.4
3. Explain safety procedures that should be followed in the agriscience laboratory A.4

Developing Leadership Skills in Agriculture B

1 Exploring the History and Organization of FFA B.1

1. Explain how, when, and why the FFA was organized B.1
2. Explain the mission and strategies, colors, motto, parts of the emblem, and the organizational structure of the FFA B.1
3. Recite and explain the meaning of the FFA Creed B.1
4. Explain the purpose of a Program of Activities and its committee structure B.1

2 Discovering Opportunities in the FFA B.2

1 Describe how the FFA develops leadership skills, personal growth, and career success B.2

2 Identify major state and national activities available to FFA members B.2

3 Determining FFA Degrees, Awards, and CDEs B.3

1 Explain the four FFA degree areas B.3

2 Identify the FFA proficiency awards B.3

3 Explain various team and individual Career Development Events B.3

4 Understanding FFA Officer Duties and Responsibilities B.4

1 Describe the duties and responsibilities of chapter FFA officers B.4

2 Explain the proper dress and characteristics of a good FFA leader B.4

SUPERVISED EXPERIENCE IN AGRICULTURE C

1 Determining the Benefits of an SAE C.1

1 Explain the importance of goals and career ladders C.1

2 Define supervised agricultural experience C.1

3 Explain the benefits of supervised agricultural experience programs C.1

2 Determining the Kinds of SAE C.2

1 Explain the difference between entrepreneurship and placement SAE's C.2

2 Describe research and experimentation SAEs and exploratory SAE's C.2

3 Explain the characteristics of a good SAE program and student responsibilities C.2

3 Researching Possible SAE Programs C.3

1 Identify career interest areas in agriculture C.3

2 Identify skills needed for career success C.3

4 Planning Your SAE Program C.4

1 Identify the steps in planning an SAE Program C.4

2 Identify the parts of an annual SAE program plan C.4

3 Discuss the function of a training plan and /or agreement in an SAE program C.4

5 Implementing SAE Programs C.5

1 Discuss the importance of keeping records on an SAE program C.5

2 Explain the types of financial records needed to support a chosen SAE program C.5

3 Identify standards to follow in keeping records on an SAE program C.5

Basic Soil Science Principles D

1 Determining the Nature of Soil D.1

1 Explain how the resources soil provides help in supporting life D.1

2 Explain the contents of soil D.1

3 Describe the biological nature of soil D.1

4 Describe the four ways plants use soil D.1

5 Describe some agricultural uses of soil D.1

6 Describe some nonagricultural uses of soil D.1

2 Understanding Soil Texture and Structure D.2

1 Describe the concept of soil texture and its importance D.2

2 Determine the texture of a soil sample D.2

3 Describe soil structure, its formation, and importance D.2

4 Identify various soil structures D.2

3 Explaining a Soil Profile D.3

1 Explain the soil profile D.3

2 Explain how soils within the profile change over time D.3

3 Distinguish between the major horizons of a soil profile D.3

4 Understanding Moisture Holding Capacity D.4

1 Explain moisture holding capacity D.4

2 Explain what determines a soil's moisture holding capacity D.4

3 Determine the moisture holding capacity of a given soil profile D.4

5 Understanding Soil Degradation D.5

1 Describe soil degradation D.5

2 Explain how construction can result in soil degradation D.5

3 Identify sources of contamination and explain how they result in soil degradation D.5

4 Explain soil erosion and how it results in soil degradation D.5

5 Identify other sources of soil degradation D.5

6 Understanding Soil Erosion and Management Practices D.6

1 Explain soil erosion D.6

2 Identify the causes of soil erosion and steps in the erosion process D.6

3 Explain the ways in which different types of wind erosion occur and the associated problems D.6

4 Distinguish between the different types of water erosion D.6

5 Identify urban management practices that reduce soil erosion D.6

6 Identify agriculture management practices that will minimize soil erosion D.6

Using Agriscience Tools and Equipment E

1 Practicing Safety in the Lab E.1

1. Explain the meaning of safety E.1
2. List hazards found in agriscience laboratories E.1
3. Identify and properly use personal protection equipment E.1
4. Describe safety practices with machinery and tools E.1
5. Describe safety in agriscience laboratories E.1

2 Identifying Agriscience Lab Tools E.2

1. Explain the importance of tools and equipment in agriscience E.2
2. Identify common agriscience equipment E.2
3. Describe important activities in maintaining agriscience equipment E.2

3 Using the Microscope E.3

1. Explain the meaning and importance of microscopes in agriscience E.3
2. Identify the major parts of a microscope E.3
3. Demonstrate the proper use and care of a microscope E.3
4. Make a temporary wet-mount slide E.3

Cells, Genetics, and Reproduction F

1 Exploring Cells F.1

1. Describe the cell's role as the structural unit F.1
2. Identify the various components of animal and plant cells and explain their functions F.1

2 Exploring Genetics F.2

1. Describe how the gender of offspring is determined F.2
2. Explain how genotype and phenotype are different F.2
3. Distinguish between qualitative and quantitative inheritance F.2

3 Examining Mitosis and Meiosis F.3

1. Define mitosis and discuss its importance F.3
2. Explain each step of mitosis F.3
3. Define meiosis and explain its importance F.3
4. Explain each step of meiosis F.3

4 Using Crossbreeding and Hybrids F.4

1. Discuss the importance of improved organisms to agriculture F.4
2. Identify methods used in agriscience to improve organisms F.4
3. Identify breeding systems used in animal science F.4

Basic Principles of Plant Science G

1 Classifying and Naming Plants G.1

1. Explain the importance of plants G.1
2. Explain the taxonomic classification of plants G.1
3. List characteristics that determine the classification of plants G.1
4. Describe how plants are named G.1
5. Explain reasons for using the scientific names of plants G.1

2 Examining Plant Structures and Functions G.2

1. Describe the cellular structure of plants G.2
2. Identify the major parts of plants and explain their functions G.2
3. Distinguish between plants based on seed cotyledons G.2
4. Explain the absorption and transport systems of plants G.2

3 Examining Flowers and Fruits G.3

1. Identify the major parts of flowers and explain the functions of the parts G.3
2. Describe the types of flowers G.3
3. Explain the processes of pollination and fertilization G.3
4. Describe the purposes and kinds of fruit G.3
5. Explain the structure and kinds of seed G.3

4 Identifying Plant Types and Uses G.4

1. Describe plant science and its three major areas G.4
2. Identify common field crops and their uses G.4
3. Define horticultural crops and describe their uses G.4
4. Describe forestry and forest products G.4

5 Determining the Importance of Photosynthesis and Respiration G.5

1. Explain photosynthesis and its importance G.5
2. Write the chemical equation for photosynthesis and explain it G.5
3. Explain how light and dark reactions differ G.5
4. Define respiration and explain why it is important G.5
5. List four factors that affect the rate of respiration G.5
6. Explain the importance of transpiration to plants G.5

6 Managing Plant Pests G.6

1. Describe common pests and their major classifications G.6
2. Explain three conditions needed for pest problems G.6
3. Describe how pests affect plants and cause losses G.6

4 Explain Integrated Pest Management (IPM) G.6

5 Describe methods used to control plant pests G.6

7 Using Soils and Growing Media G.7

1 Identify the components of soil and soil less media G.7

2 Describe the differences between soil-based and soil less media G.7

3 Identify the elements involved in the formation of soil G.7

4 Describe the process of soil sterilization G.7

8 Determining Plant Nutrients and Fertility G.8

1 Identify the essential nutrients for plant growth G.8

2 Distinguish between micronutrients and macronutrients G.8

3 Discuss the nitrogen cycle and its affect on plant nutrition G.8

4 Define pH and discuss its role in plant nutrition G.8

5 Explain the use of fertilizers G.8

9 Propagating Plants Sexually G.9

1 Explain sexual reproduction of plants and its importance in plant survival. G.9

2 Explain how pollination occurs and describe the different types of pollination G.9

3 Explain fertilization in flowering plants G.9

4 Explain the structures and formation of seeds G.9

5 Describe the conditions for seed germination G.9

10 Propagating Plants Asexually G.10

1 Explain asexual propagation G.10

2 Discuss and identify the various methods of stem cutting propagation G.10

3 Discuss the methods of leaf and leaf-bud cuttings G.10

4 Describe the various types of growing media used for cuttings G.10

5 Describe grafting and identify three common methods G.10

6 Explain layering and the difference between separation and division in plant propagation G.10

7 Explain tissue culture G.10

Basic Principles in Animal Science H

1 Identifying Differences between Plants and Animals H.1

1 Explain the meaning of an organism and list its characteristics H.1

2 Define plant and animal H.1

3 Name and describe the life processes of living organisms H.1

4 List the similarities of plants and animals H.1

5 List and explain differences in the life processes of plants and animals H.1

2 Determining the Anatomy and Physiology of Animals H.2

1 Explain the meaning of anatomy and physiology H.2

2 Explain the role of cell specialization in organisms H.2

3 Describe the importance of anatomy and physiology in animal production H.2

4 List the organ systems of mammals and describe the functions, major parts and locations of each H.2

5 Identify the external parts of selected animals H.2

3 Understanding Animal Reproduction H.3

1 Describe the importance and process of animal reproduction H.3

2 List the sexual classification of animals for major species H.3

3 List the parts and explain the functions of female and male reproductive systems H.3

4 List and describe the phases of the estrous cycle H.3

5 Explain the reproductive development of animals H.3

4 Exploring the Animal Industry H.4

1 Define the term animal industry and explain important areas of the industry H.4

2 Describe the uses of animals H.4

3 Explain animal domestication H.4

4 List and describe important areas in animal care and production H.4