

# **INTRODUCTION TO HORTICULTURE**

## Curriculum Content Frameworks

**Please note: All assessment questions will be taken from the knowledge portion of these frameworks.**

*Prepared by*

Patrick Breeding, Greenbrier High School  
Chad Burkett, Springdale High School  
Keith Gresham, Rison High School  
Dr. Jeff Horne, Southern Arkansas University  
Josh Rice, Springdale High School  
Larry Robertson, Batesville High School  
Michael Vines, Mena High School  
Dr. Jasper S. Lee, Ronald J. Biondo, and Daniel J. Pentony  
Center for Agricultural and Environmental Research & Training (CAERT) Inc.  
Danville, IL 61832

*Facilitated by*

Karen Chisholm, Program Manager  
Office of Assessment and Curriculum  
Arkansas Department of Workforce Education

*Edited by*

Marion Fletcher, Program Manager  
Bruce Lazarus, Program Advisor  
Dr. Ann Horne, Program Advisor  
Bart Draper, Program Advisor

*Disseminated by*

Career and Technical Education  
Office of Assessment and Curriculum  
Arkansas Department of Workforce Education

# Curriculum Content Frameworks

## Introduction to Horticulture

Grade Levels: 10, 11, 12  
Course Code: 491280

Prerequisite: None

Course Description: This is an introductory course for students with a strong interest in horticulture. Careers in the industry are covered as well as basic plant systems and pest control. The student will be introduced to the areas of greenhouse management, nursery management, and landscaping.

### Table of Contents

	Page
Unit 1: Introduction to Horticultural Science	1
Unit 2: Safety in Horticulture	2
Unit 3: Classifying and Naming Plants	3
Unit 4: Plant Science	4
Unit 5: Plant Growth	6
Unit 6: Plant Propagation	8
Unit 7: Pest Management	9
Unit 8: Container-grown Plants	10
Unit 9: Using Plants in the Landscape	11
Glossary	12

# Unit 1: Introduction to Horticultural Science

## Hours: 5

Terminology, Career Development Events (CDE), Entrepreneur, Floriculture, Horticulture, Interior Landscaping, Landscaping, Olericulture, Ornamental Horticulture, Placement, Pomology, Proficiency, SAE

CAREER and TECHNICAL SKILLS		ACADEMIC and WORKPLACE SKILLS			
What the Student Should be Able to Do		What the Instruction Should Reinforce			
Knowledge	Application	Skill Group	Skill	Description	
1.1 Define terminology	1.1.1 Prepare a list of terms with definitions	Foundation	Reading	Comprehends written information for main ideas [1.3.7]	
			Writing	Applies/Uses technical words and concepts [1.6.4]	
1.2 List the major areas of the horticulture industry; nursery/landscape, floriculture, pomology, olericulture, ornamental horticulture	1.2.1 Identify two species of plants in each of these broad areas	Foundation	Speaking	Speaks in a clear, concise manner [1.5.12]	
		Thinking	Creative Thinking	Makes connections between seemingly unrelated ideas [4.1.6]	
1.3 Identify careers in the horticulture industry	1.3.1 Determine education requirements, working conditions, and salary for a career in the horticultural industry	Foundation	Writing	Takes notes from various sources [1.6.18]	
		Personal Management	Career Awareness, Development, and Mobility	Uses language, style, organization, and format appropriate to subject matter, purpose, and audience [1.6.19]	
				Develops skills to locate, evaluate, and interpret career information [3.1.3]	
				Explores career opportunities [3.1.5]	
				Identifies education and training needed to achieve goals [3.1.7]	
1.4 Discuss FFA activities available to students in horticulture	1.4.1 Demonstrate knowledge by participating in Career Development Events (CDE)	Foundation	Speaking	Participates in conversation, discussion, and group presentations [1.5.8]	
	1.4.2 Relate the role of supervised experience to advancements in the FFA	Personal Management	Career Awareness, Development, and Mobility	Responds to listener feedback [1.5.10]	
	1.4.3 Keep records of FFA and supervised experience activities			Sets well defined and realistic personal/career goals (short term and long term) [3.1.1]	

## Unit 2: Safety in Horticulture

### Hours: 5

Terminology: Accident, Hazard, Material Safety Data Sheet (MSDS), Risk, Safety

<b>CAREER and TECHNICAL SKILLS</b>		<b>ACADEMIC and WORKPLACE SKILLS</b>			
What the Student Should be Able to Do		What the Instruction Should Reinforce			
Knowledge	Application	Skill Group	Skill	Description	
2.1 Define terminology	2.1.1 Prepare a list of terms with definitions	Foundation	Reading	Comprehends written information for main ideas [1.3.7]	
			Writing	Applies/Uses technical words and concepts [1.6.4]	
2.2 Discuss the meaning and importance of safety and safe work with horticulture	2.2.1 Relate examples of safety hazards in horticulture, including equipment used in crop production and the inputs applied to plants such as pesticides and fertilizers	Foundation	Reading	Distinguishes between fact and opinion [1.3.11]	
	2.2.2 Name examples of accidents that have occurred locally in horticulture		Speaking	Asks questions to obtain information [1.5.4]  Communicates a thought, idea, or fact in spoken form [1.5.5]	
2.3 Identify hazards in horticulture	2.3.1 Survey hazardous situations in local horticulture facilities and prescribe the appropriate safety measures to be taken and propose ways of eliminating or reducing the risk of these hazards	Foundation	Reading	Analyzes and applies what has been read to specific task [1.3.2]	
	2.3.2 Develop a list of practices to reduce risk when working with plants	Personal Management	Integrity/Honesty/Work Ethic	Complies with safety and health rules in a given work environment [3.2.2]	
2.4 Describe the importance of personal safety in horticulture	2.4.1 Identify and properly use appropriate Personal Protective Equipment (PPE) with horticulture	Foundation	Arithmetic/Mathematics	Calculates dollar amounts [1.1.7]	
	2.4.2 Calculate the cost of PPE for an individual involved with horticulture	Interpersonal	Negotiation	Works to resolve conflict between two or more individuals [2.5.3]	
	2.4.3 Work together with others to promote safety in horticulture	Thinking	Problem Solving	Comprehends ideas and concepts related to safety with animals [4.4.1]	
	2.4.4 Take a test on horticulture safety before beginning work with plants				

## Unit 3: Classifying and Naming Plants

### Hours: 5

**Terminology:** Cultivar, Deciduous, Dicot, Evergreen, Genus, Herbaceous plant, Monocot, Morphology, Nomenclature, Species, Taxonomy, Variety, Woody plant

<b>CAREER and TECHNICAL SKILLS</b>		<b>ACADEMIC and WORKPLACE SKILLS</b>			
What the Student Should be Able to Do		What the Instruction Should Reinforce			
Knowledge	Application	Skill Group	Skill	Description	
3.1 Define terminology	3.1.1 Prepare a list of terms with definitions	Foundation	Reading	Comprehends written information for main ideas [1.3.7]	
			Writing	Applies/Uses technical words and concepts [1.6.4]	
3.2 Differentiate between herbaceous and woody plants	3.2.1 Discuss the advantages of using perennials in a landscape	Foundation	Listening	Receives/Interprets verbal messages [1.2.8]	
	3.2.2 Give examples of five herbaceous and five woody plants	Thinking	Creative Thinking	Combines ideas or information in a new way [4.1.2]	
3.3 Explain differences between monocots and dicots	3.3.1 Identify characteristic leaf, stem, root, and floral structures of monocot and plants	Foundation	Listening	Receives/Interprets verbal messages [1.2.8]	
		Thinking	Creative Thinking	Combines ideas or information in a new way [4.1.2]	
3.4 Differentiate between deciduous and evergreen	3.4.1 Give examples of five deciduous and five evergreen plants that grow in the area	Foundation	Listening	Receives/Interprets verbal messages [1.2.8]	
		Thinking	Creative Thinking	Combines ideas or information in a new way [4.1.2]	
3.5 Discuss binomial nomenclature; genus, species, variety, cultivar	3.5.1 Determine the common and scientific names of five plants that grow in the local area or school greenhouse	Foundation	Reading	Applies information and concepts derived from printed materials [1.3.3]	

## Unit 4: Plant Science

**Hours: 15**

**Terminology:** Anther, Apical meristem, Cellular respiration, Chloroplast, Fertilization, Filament, Flower, Fruit, Leaf, Ovary, Petal, Photosynthesis, Pistil, Pollination, Root, Sepal, Stamen, Stem, Stigma, Stomata, Style, Transpiration

<b>CAREER and TECHNICAL SKILLS</b>		<b>ACADEMIC and WORKPLACE SKILLS</b>			
What the Student Should be Able to Do		What the Instruction Should Reinforce			
Knowledge	Application	Skill Group	Skill	Description	
4.1 Define terminology	4.1.1 Prepare a list of terms with definitions	Foundation	Reading	Comprehends written information for main ideas [1.3.7]	
			Writing	Applies/Uses technical words and concepts [1.6.4]	
4.2 List the four basic parts of a plant; roots, stems, leaves, reproductive parts	4.2.1 Draw a simple plant and label the four major parts	Foundation	Writing	Adapts notes to a proper form [1.6.1]	
		Interpersonal	Coaching	Helps others learn new skills [2.1.3]	
4.3 Describe the function of roots	4.3.1 Prepare a short report on the functions of roots	Foundation	Science	Develops visual aids to create audience interest [1.4.1]	
		Thinking	Reasoning	Describes/Explains scientific principles related to plant science [1.4.14]	
				Sees relationship between two or more ideas or situations [4.5.5]	
4.4 Discuss the function of leaves	4.4.1 Prepare a short report on the functions of leaves	Foundation	Listening	Comprehends ideas and concepts related to plant science [1.2.1]	
		Personal Management	Responsibility	Comprehends ideas and concepts related to leaves of plants [3.4.2]	
4.5 Explain the function of stems	4.5.1 Prepare a short report on the functions of stems	Foundation	Reading	Adjusts reading strategy to purpose and type of reading (skimming and scanning) [1.3.1]	
		Interpersonal	Teamwork	Comprehends ideas and concepts related to the functions of stems on various plants [2.6.1]	
4.6 Describe the function of flowers and fruit	4.6.1 Prepare a short report on the functions of flowers and fruits	Foundation	Speaking	Organizes ideas and communicates oral messages to listeners [1.5.7]	
		Interpersonal	Coaching	Comprehends ideas and concepts related to the functions of flowers and fruit [2.1.1]	

<b>CAREER and TECHNICAL SKILLS</b>		<b>ACADEMIC and WORKPLACE SKILLS</b>			
What the Student Should be Able to Do		What the Instruction Should Reinforce			
<b>Knowledge</b>	<b>Application</b>	<b>Skill Group</b>	<b>Skill</b>	<b>Description</b>	
4.7 Explain the photosynthesis process	4.7.1 Diagram the chemical equation for photosynthesis	Foundation	Speaking	Applies/Uses technical terms as appropriate to audience [1.5.2]	
		Thinking	Creative Thinking	Combines ideas or information in new way [4.1.2]	
4.8 Explain the cellular respiration	4.8.1 Diagram the chemical equation for cellular respiration	Foundation	Speaking	Applies/Uses technical terms as appropriate to audience [1.5.2]	
		Thinking	Creative Thinking	Combines ideas or information in new way [4.1.2]	
4.9 List the reproductive parts of a flower	4.9.1 Draw a complete flower and label the major parts	Foundation	Science	Uses technical words and symbols [1.6.20]	
		Thinking	Seeing	Comprehends ideas and concepts related to the parts of a flower [3.4.2]	
4.10 Examine pollination and fertilization	4.10.1 Illustrate the processes of pollination and fertilization from the release of pollen to double fertilization of the egg	Foundation	Listening	Listens for content [1.2.3]	
		Personal Management	Career Awareness, Development, and Mobility	Comprehends ideas and concepts related to pollination [3.1.3]	

## Unit 5: Plant Growth

### Hours: 10

**Terminology:** Clay, Complete fertilizer, Fertilizer, Growth regulators, Hormones, Nitrogen, Nutrient, Organic matter, Peat moss, Perlite, pH, Phosphorus, Potassium, Sand, Silt, Soil texture, Soilless media, Vermiculite

<b>CAREER and TECHNICAL SKILLS</b>		<b>ACADEMIC and WORKPLACE SKILLS</b>			
What the Student Should be Able to Do		What the Instruction Should Reinforce			
Knowledge	Application	Skill Group	Skill	Description	
5.1 Define terminology	5.1.1 Prepare a list of terms with definitions	Foundation	Reading	Comprehends written information for main ideas [1.3.7]	
			Writing	Applies/Uses technical words and concepts [1.6.4]	
5.2 List the three basic mineral soil particles; sand, silt, clay	5.2.1 Relate the qualities of sand, silt, and clay	Foundation	Speaking	Communicates a thought, idea, or fact in spoken form [1.5.5]	
		Thinking	Creative Thinking	Develops visual aids to create audience interest [4.1.4]	
5.3 Discuss media types; mineral soil, soilless media	5.3.1 Distinguish between mineral soil and soilless media	Foundation	Science	Analyzes environmental issues (ecology, pollution, waste management) [1.4.2]	
		Thinking	Creative Thinking	Forms opinion [4.1.7]	
5.4 List the three primary elements of a complete fertilizer; nitrogen, phosphorus, and potassium	5.4.1 Analyze the label from a bag of complete fertilizer to determine its contents	Foundation	Writing	Communicates thoughts, ideas, or facts in written form in a clear, concise manner [1.6.6]	
		Thinking	Decision Making	Comprehends ideas and concepts related to fertilizer [4.2.2]	
5.5 Discuss soil pH	5.5.1 Conduct media pH tests	Foundation	Listening	Listens for content [1.2.3]	
		Thinking	Knowing How to Learn	Locates appropriate learning resources to acquire or improve knowledge and skills [4.3.3]	
5.6 Identify components of soilless media; peat moss, perlite, vermiculite	5.6.1 Select soilless media based on its components	Foundation	Speaking	Pronounces words correctly [1.5.9]	
		Thinking	Seeing Things in the Mind's Eye	Visualizes a finished product [4.6.2]	
5.7 List the environmental factors that affect plant growth; light, temperature, water, air	5.7.1 Explain the influence light, temperature, water, and air have on plant growth	Foundation	Reading	Draws conclusions from what is read [1.3.12]	
		Personal Management	Responsibility	Comprehends ideas and concepts related to environmental factors of plant growth [3.1.3]	

<b>CAREER and TECHNICAL SKILLS</b>		<b>ACADEMIC and WORKPLACE SKILLS</b>			
What the Student Should be Able to Do		What the Instruction Should Reinforce			
<b>Knowledge</b>	<b>Application</b>	<b>Skill Group</b>	<b>Skill</b>	<b>Description</b>	
5.8 Describe the effects of plant hormones	5.8.1 Conduct simple experiments to demonstrate the effects of plant hormones	Foundation	Writing	Analyzes data, summarizes results, and makes conclusions [1.6.2]	
		Interpersonal	Teamwork	Comprehends ideas and concepts related to the importance of hormones [2.6.1]	
5.9 Explain the importance of growth regulators	5.9.1 Apply plant growth regulators to plants for a desired response	Foundation	Speaking	Applies/Uses technical terms as appropriate to audience [1.5.2]	
		Thinking	Creative Thinking	Forms opinions [4.1.7]	

## Unit 6: Plant Propagation

### Hours: 5

Terminology: Asexual, Germination, Propagation, Seed, Sexual, Vegetative,

<b>CAREER and TECHNICAL SKILLS</b> What the Student Should be Able to Do		<b>ACADEMIC and WORKPLACE SKILLS</b> What the Instruction Should Reinforce			
Knowledge	Application	Skill Group	Skill	Description	
6.1 Define terminology	6.1.1 Prepare a list of terms with definitions	Foundation	Reading  Writing	Comprehends written information for main ideas [1.3.7]  Applies/Uses technical words and concepts [1.6.4]	
6.2 Compare and contrast sexual propagation and asexual propagation	6.2.1 Propagate plants using sexual propagation methods	Foundation	Science  Writing	Acquires and processes scientific data [1.4.1]  Adapts notes to a proper form [1.6.1]	
	6.2.2 Propagate plants using asexual propagation	Thinking	Creative Thinking  Reasoning	Makes connection between seemingly unrelated ideas [4.1.6]  Sees relationship between two or more ideas, objects, or situations [4.5.5]	

## Unit 7: Pest Management

### Hours: 5

Terminology: Fungicide, Herbicide, Insecticide, Integrated Pest Management (IPM), LD, Miticide, Molluscicide, Nematocide, Pest, Pesticide, Rodenticide, Signal words

<b>CAREER and TECHNICAL SKILLS</b>		<b>ACADEMIC and WORKPLACE SKILLS</b>			
What the Student Should be Able to Do		What the Instruction Should Reinforce			
Knowledge	Application	Skill Group	Skill	Description	
7.1 Define terminology	7.1.1 Prepare a list of terms with definitions	Foundation	Reading	Comprehends written information for main ideas [1.3.7]	
			Writing	Applies/Uses technical words and concepts [1.6.4]	
7.2 Read and interpret chemical labels	7.2.1 Explain the meaning of the different parts of a pesticide label	Foundation	Science	Follows safety guidelines [1.4.16]	
		Personal Management	Integrity/Honesty/Work Ethic	Chooses ethical course of action [3.2.1]	
7.3 Identify and interpret the four signal words on chemical labels; danger, warning, caution, keep out of reach of children	7.3.1 Convey the meaning of the four signal words used on chemical labels	Foundation	Writing	Uses technical words and symbols [1.6.20]	
		Personal Management	Responsibility	Comprehends ideas and concepts related to pest control [3.4.2]	
7.4 Identify Personal Protective Equipment (PPE) needed to apply pesticides; respirator, goggles, rubber gloves, rubber boots, long sleeved shirt, overalls/apron	7.4.1 Demonstrate the proper use of Personal Protective Equipment (PPE)	Foundation	Speaking	Organizes ideas and communicates oral messages to listeners [1.5.7]	
		Interpersonal	Coaching	Encourages others to develop personal and professional skills [2.1.2]	
7.5 Discuss the benefits of integrated pest management	7.5.1 Explain the advantages associated with integrated pest management	Foundation	Science	Analyzes environmental issues (ecology, pollution, waste management) [1.4.2]	
		Thinking	Decision Making	Identifies pros and cons to assist in decision-making process [4.2.7]	

## Unit 8: Container-grown Plants

### Hours: 5

Terminology: Balled and burlapped, Bare root, Container-grown, Field-grown, Interiorscaping

<b>CAREER and TECHNICAL SKILLS</b> What the Student Should be Able to Do		<b>ACADEMIC and WORKPLACE SKILLS</b> What the Instruction Should Reinforce			
Knowledge	Application	Skill Group	Skill	Description	
8.1 Define terminology	8.1.1 Prepare a list of terms with definitions	Foundation	Reading	Comprehends written information for main ideas [1.3.7]	
			Writing	Applies/Uses technical words and concepts [1.6.4]	
8.2 Identify the importance of interiorscaping	8.2.1 Visit malls, restaurants, hotels, or other locations with a large number of plants to observe the impact of plants on the interior landscape	Foundation	Speaking	Communicates a thought, idea, or fact in spoken form [1.5.5]	
		Thinking	Creative Thinking	Prepares presentation based on subject research, interviews, and surveys [4.1.10]	
8.3 Compare and contrast container-grown plants and field-grown plants	8.3.1 Discuss water and fertilizer requirements for container-grown and field-grown shrubs and trees	Foundation	Reading	Identifies relevant details, facts, and specifications [1.3.16]	
		Thinking	Decision Making	Evaluates information/data to make best decision [4.2.5]	
8.4 Explain the advantages and disadvantages of plastic, ceramic, terra cotta, and glass pots	8.4.1 Select pots based on the attributes of the different materials used to make the pot	Interpersonal	Customer Service	Demonstrates face-to-face selling skills [2.3.3]	
		Thinking	Problem Solving	Demonstrates logical reasoning in reaching a conclusion [4.4.2]	

## Unit 9: Using Plants in the Landscape

### Hours: 5

Terminology: Annual flower, Biennial flower, Ground cover, Hardiness, Heat tolerance, Ornamental tree, Perennial, Shade tree, Shrub, Tree, Vine

<b>CAREER and TECHNICAL SKILLS</b>		<b>ACADEMIC and WORKPLACE SKILLS</b>			
What the Student Should be Able to Do		What the Instruction Should Reinforce			
Knowledge	Application	Skill Group	Skill	Description	
9.1 Define terminology	9.1.1 Prepare a list of terms with definitions	Foundation	Reading	Comprehends written information for main ideas [1.3.7]	
			Writing	Applies/Uses technical words and concepts [1.6.4]	
9.2 Discuss the major types of plants used in the landscape; annual flowers, biennial flowers, perennial flowers, ground covers, ornamental trees, shade trees, shrubs, vines	9.2.1 Classify landscape plants according to their function in the landscape	Thinking	Decision Making	Comprehends ideas and concepts related to herbaceous and woody plants [4.2.2]	
9.3 Explain hardiness and heat tolerance	9.3.1 Choose plants for the landscape based on their hardiness and heat tolerance	Foundation	Listening	Receives/interprets verbal messages [1.2.8]	
		Thinking	Creative Thinking	Combines ideas or information in a new way [4.1.2]	
9.4 Discuss sun exposure as related to plants; full sun, partial shade, shade	9.4.1 Choose plants for the landscape based on their tolerance to sun or shade	Foundation	Listening	Receives/interprets verbal messages [1.2.8]	
		Thinking	Creative Thinking	Combines ideas or information in a new way [4.1.2]	
9.5 Discuss deciduous vs. evergreen as used in a landscape	9.5.1 Evaluate the use of deciduous and evergreen plants in a landscape	Foundation	Reading	Interprets drawings to obtain factual information [1.3.17]	
		Personal Management	Responsibility	Uses appropriate materials and techniques as specified [1.3.20] Exhibits enthusiasm in approaching and completing tasks [3.4.3]	

## Glossary

### Unit 1: Introduction to Horticultural Science

1. CDE – career development event
2. Entrepreneur – one who works for oneself
3. Floriculture – the science and practice of growing, harvesting, storing, designing, marketing, and distributing foliage and/or flowering plants
4. Horticulture – literally means “garden cultivation”; includes the cultivation, processing, and sale of fruits, nuts, vegetables, ornamental plants, and flowers
5. Interiorscaping – using live plants to landscape indoor areas; also known as plantscaping
6. Landscaping – the science and practice of installing, maintaining, and using grasses, plants, shrubs, and trees in the landscape
7. Olericulture – the science and practice of growing, harvesting, storing, processing, and marketing vegetables
8. Ornamental horticulture – the practice of growing and using plants for decorative purposes
9. Placement – working for someone else
10. Pomology – the science and practice of growing, harvesting, handling, storing, processing, and marketing tree fruits
11. Proficiency – an award for an individual's SAE
12. SAE – supervised agricultural experience

## Unit 2: Safety in Horticulture

1. Accident – an event that happens unexpectedly or unintentionally
2. Hazard – exposure to danger or harm
3. Material Safety Data Sheet (MSDS) – a sheet containing information about the safe use of a chemical and the steps to take in case of an accident
4. Risk – the chance that an accident might occur during a research project
5. Safety – a state of being free of danger and injury

## Unit 3: Classifying and Naming Plants

1. Cultivar – group of organisms with distinguishing characteristics from other plants in a species, but does not transfer those characteristics to the offspring through sexual reproduction
2. Deciduous – plants that shed their leaves in the fall
3. Dicot – plants with two cotyledons, flower parts usually in multiples of four or five, true secondary growth, vascular bundles arranged in a ring in the stem
4. Evergreen – a plant that keeps its leaves year round
5. Genus – closely related organisms of one or more species that are grouped together
6. Herbaceous plant – a non-woody plant that dies back to the ground each year
7. Monocot – plants with one cotyledon, flower parts usually in multiples of three, leaf venation usually parallel, no secondary growth, vascular bundles scattered in the stem
8. Morphology – the branch of biology that deals with the forms of organisms
9. Nomenclature – the naming of organisms
10. Species – a group of organisms with characteristics that distinguish them from other groups in a genus
11. Taxonomy – the branch of biology that deals with identifying and naming organisms
12. Variety – cultivated plants within a species that show a significant difference from other plants in the species
13. Woody plant – a plant that produces wood and has buds above the ground that survive winter

## Unit 4: Plant Science

1. Anther – a sac-like structure at the top of the stamen that contains pollen
2. Apical meristem – the primary growing point of the stem
3. Cellular respiration – chemical reaction in which stored food energy is made available for plants and animals
4. Chloroplast – the specialized organelle in green plants in which photosynthesis takes place
5. Fertilization – the fusion or joining of a sperm with an egg
6. Filament – the stalk-like part of the stamen that holds the anther
7. Flower – the reproductive organs of a plant
8. Fruit – the reproductive body of a seed plant consisting of one or more seeds and usually various protective and supporting structures
9. Leaf – an outgrowth from a plant that constitutes part of the foliage and functions primarily in food manufacture by photosynthesis
10. Ovary – the lower part of the pistil that contains one or more ovules or the part in which the eggs are produced and seeds develop
11. Petal – leaf-like structures located inside the sepals that are often colorful
12. Photosynthesis – the manufacture of food by green plants in which carbon dioxide and water are combined in the presence of light and chlorophyll to form sugar and oxygen
13. Pistil – the female reproductive parts of a flower
14. Pollination – the transfer of pollen from the anther to the stigma of the flower
15. Root – the lower portion of a plant that bears neither leaves nor reproductive organs and that mostly develops underground and anchors the plant; the hairs absorb water and mineral nutrients
16. Sepal – green leaf-like structure on the exterior of a flower
17. Stamen – the male reproductive parts of a flower
18. Stem – stalk, trunk, or branch of a plant; can be vertical or horizontal
19. Stigma – structure found at the top end of the pistil that contains a sticky surface on which pollen can be caught
20. Stomata – the pores or openings in the epidermis of a leaf that allow the exchange of oxygen, carbon dioxide, and water vapor

21. Style – the tube in the pistil that leads from the stigma to the ovary and through which pollen reaches the ova and egg
22. Transpiration – the water loss from plant tissues

## Unit 5: Plant Growth

1. Clay – fine-grained soil; smallest soil particle
2. Complete fertilizer – contains all three of the primary fertilizer nutrients (nitrogen, phosphorus, and potash)
3. Fertilizer – any material used to provide nutrients that plants need
4. Growth regulators – hormones and synthetic chemicals that inhibit or modify plant growth and development
5. Hormones – chemical messenger substance that affects plant growth
6. Nitrogen – odorless, colorless nutrient needed for plant life
7. Nutrient – a chemical element required for plant growth
8. Organic matter – decayed remains of plants and animals
9. Peat moss – moss plants that grow on heath bogs
10. Perlite – heat-treated lava rock that is light weight with low moisture and nutrient-holding capacity
11. pH – an index of the acidity of a substance
12. Phosphorus – a soft, nonmetallic element
13. Potassium – a bluish-white, highly reactive, metallic element
14. Sand – largest soil particle; hard, granular rock; finer than gravel and coarser than dust
15. Silt – fine particles of soil; smaller than sand and larger than clay
16. Soil texture – the proportion of sand, silt, and clay in soil
17. Soilless media – growing media that lack any mineral soil
18. Vermiculite – heat-treated mica that is light weight with nutrient and moisture-holding capacity

## Unit 6: Plant Propagation

1. Asexual – without the union of male and female sex cells (also referred to as vegetative)
2. Germination – the beginning of growth from a seed
3. Propagation – the reproduction of plants by seed, cuttings, budding, or grafting to increase in number, to reproduce
4. Seed – structure that has an embryo and a source of stored food contained within a protective coat
5. Sexual – reproduction involving the male and female sex cells (pollen and egg)
6. Vegetative – type of reproduction using plant parts (but not the reproductive parts)

## Unit 7: Pest Management

1. Fungicide – a substance used to control undesirable fungi
2. Herbicide – material used to control undesirable plants
3. Insecticide – material used to control insects
4. Integrated Pest Management (IPM) – a variety of control methods, such as cultural, mechanical, biological and chemical, used together to control pests
5. LD – lethal dose
6. Miticide – material used to control mites
7. Molluscicide – a chemical used to kill snails and slugs
8. Nematocide – material used to control nematodes
9. Pest – anything unwanted
10. Pesticide – material used to kill or repel pests
11. Rodenticide – a substance used to control rodents
12. Signal words – words on a pesticide label used to alert the user to the toxicity of a pesticide (danger, caution, warning, poison)

## Unit 8: Container-grown Plants

1. Balled and burlapped – a harvesting technique where a plant is dug keeping a ball of soil around the root system and covering it with burlap to hold the soil and roots together
2. Bare root – a harvesting technique where a plant is dug without taking soil from the field
3. Container-grown – plants that are grown in manmade containers, such as clay or plastic pots or hanging baskets
4. Field-grown – plants grown in normal soil in the ground
5. Interiorscaping – using indoor plants (also commonly referred to as "houseplants") to decorate or improve aesthetics inside a home or commercial building

## Unit 9: Using Plants in the Landscape

1. Annual flower – a plant that completes its life cycle in one year
2. Biennial flower – a plant that completes its life cycle in two seasons
3. Ground cover – woody or herbaceous plant that forms a mat less than 1 foot high covering the ground
4. Hardiness – the ability of a plant to withstand cold temperatures
5. Heat tolerance – the ability of a plant to withstand hot temperatures
6. Ornamental tree – smaller trees of high ornamental value
7. Perennial – a plant that lives for more than two seasons
8. Shade tree – large trees with spreading canopies
9. Shrub – multi-stem, woody plants that do not exceed 20 feet in height
10. Tree – a single-stem, woody, perennial plant reaching the height of 12 feet or more
11. Vine – woody or herbaceous plant that require some type of support