Unit 4: Nursery, Landscaping, and Gardening

Content Area: **CTE**
Course(s): **Horticulture II**
Time Period: **February**
Length: **30**
Status: **Published**

Unit Overview

Landscape Maintenance

Enduring Understandings

- Adequate amounts of water sustain an actively growing turfgrass.
- Lawns are mowed for aesthetic purposes. A neatly mowed lawn is attractive. Mowing, or cutting grass, also reduces problems with some weeds and prevents turfgrasses from forming seed heads.
- Proper pruning leads to attractive, healthy plants.
- Proper pruning of deciduous shrubs in the landscape can enhance the appearance of the plants. Pruning helps keep shrubs vigorous. The techniques and practices used in pruning shrubs are influenced by the types of shrubs being pruned.
- Pruning is the selective removal or reduction of certain plant parts. It can range from the removal of large tree limbs to the pinching off of growing tips.
- Turfgrasses, like all other plants, need nutrients to grow. Most of the nutrients are obtained from the soil. For optimal growth, providing additional nutrients is necessary.

Essential Questions

- What are other maintenance practices for turfgrass?
- What are the proper mowing procedures for turfgrass?
- What are the recommended fertilization practices for turfgrass?
- What are the recommended watering practices for turfgrass?

Standards/Indicators/Student Learning Objectives (SLOs)

1 Identify and describe common types of turf maintenance equipment.

2 Identify and describe common landscape installation and maintenance tools and equipment.

3 Discuss the proper maintenance of power tools and equipment.

9.3.12.AG	Agriculture, Food & Natural Resources
9.3.12.AG.1	Analyze how issues, trends, technologies and public policies impact systems in the Agriculture, Food & Natural Resources Career Cluster.

9.3.12.AG.2	Evaluate the nature and scope of the Agriculture, Food & Natural Resources Career Cluster and the role of agriculture, food and natural resources (AFNR) in society and the economy.
9.3.12.AG.3	Examine and summarize the importance of health, safety and environmental management systems in AFNR businesses.
9.3.12.AG.6	Analyze the interaction among AFNR systems in the production, processing and management of food, fiber and fuel and the sustainable use of natural resources.
9.3.12.AG-BIZ	Agribusiness Systems
PFL.9.1.12.A	Income and Careers
PFL.9.1.12.A.2	Differentiate between taxable and nontaxable income.
PFL.9.1.12.A.6	Summarize the financial risks and benefits of entrepreneurship as a career choice.
PFL.9.1.12.A.7	Analyze and critique various sources of income and available resources (e.g., financial assets, property, and transfer payments) and how they may substitute for earned income.
9-12.HS-LS1-1.LS1.A	Structure and Function
9-12.HS-LS1-1.LS1.A.1	Systems of specialized cells within organisms help them perform the essential functions of life.
9-12.HS-LS1-1.LS1.A.2	All cells contain genetic information in the form of DNA molecules. Genes are regions in the DNA that contain the instructions that code for the formation of proteins, which carry out most of the work of cells.
CAEP.9.2.12.C	Career Preparation
CAEP.9.2.12.C.1	Review career goals and determine steps necessary for attainment.
CAEP.9.2.12.C.2	Modify Personalized Student Learning Plans to support declared career goals.
CAEP.9.2.12.C.3	Identify transferable career skills and design alternate career plans.
CAEP.9.2.12.C.4	Analyze how economic conditions and societal changes influence employment trends and future education.
	Functions describe situations where one quantity determines another. For example, the return on $10,000 invested at an annualized percentage rate of 4.25% is a function of the length of time the money is invested. Because we continually make theories about dependencies between quantities in nature and society, functions are important tools in the construction of mathematical models.

Lesson Titles

- Identifying Tools and Equipment Associated with Turfgrass
- Identifying, Classifying, and Selecting Turfgrass
- Managing Turfgrass
- Pruning Landscape Plants

Inter-Disciplinary Connections

- RST.11-12.3. Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.
- 10. English Language Arts
- 10.8.12. Science and Technical Subjects: 9-12

- 10.8.12.SC12. Science and Technical Subjects: 11-12
- 10.8.12.SC12.3. Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.
- English 11-12.RST.1.3
- National AFNR Standards PS.03.02.04a, PS.03.02.04b
- National AFNR Standards PS.03.02.05a, PS.03.02.05b
- RST.11-12.1. Accurately cite strong and thorough evidence from the text to support analysis of science and technical texts, attending to precise details for explanations or descriptions.
- RST.11-12.2. Determine the central ideas, themes, or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms

Diversity

Climate Mandate

Climate change is significantly impacting the nursery, landscaping, and gardening industries. Here are some key ways to integrate climate change considerations into these fields:

Understanding the Impacts of Climate Change

- **Changing Weather Patterns:** Increased frequency and intensity of extreme weather events like droughts, floods, and heatwaves can stress plants and disrupt growth cycles.
- **Shifting Plant Hardiness Zones:** As temperatures rise, traditional plant hardiness zones may shift, requiring adaptation in plant selection and care.
- **Pest and Disease Pressure:** Warmer temperatures and altered precipitation patterns can create favorable conditions for pests and diseases, leading to increased plant damage and disease outbreaks.

Adapting to a Changing Climate

- **Selecting Climate-Resilient Plants:** Choose plants that are adapted to local climate conditions and are tolerant to heat, drought, and pests.
- **Water-Wise Landscaping:** Implement water-saving strategies, such as efficient irrigation systems, drought-tolerant plants, and mulching.
- **Soil Health Management:** Improve soil health through practices like composting, cover cropping, and reduced tillage to enhance water retention, nutrient cycling, and carbon sequestration.
- **Integrated Pest Management (IPM):** Use a combination of cultural, biological, and chemical control methods to manage pests and diseases in a sustainable way.
- **Diversification:** Plant a variety of species to reduce the risk of crop failure due to climate-related events.

Mitigating Climate Change

- **Carbon Sequestration:** Plant trees and other vegetation to absorb carbon dioxide from the atmosphere

and improve air quality.
- **Reduced Pesticide Use:** Minimize the use of pesticides and herbicides to reduce pollution and protect the environment.
- **Sustainable Practices:** Adopt sustainable practices, such as recycling, composting, and reducing waste, to minimize the industry's environmental footprint.

Educating and Engaging the Public

- **Climate-Smart Gardening:** Promote climate-smart gardening practices through workshops, demonstrations, and educational materials.
- **Community Engagement:** Collaborate with community organizations to create green spaces and promote sustainable landscaping.
- **Advocacy:** Advocate for policies that support climate-friendly practices and sustainable agriculture.

By addressing these challenges and opportunities, the nursery, landscaping, and gardening industries can play a crucial role in mitigating climate change and creating more sustainable and resilient landscapes.

Amistad Mandate

1. Historical Context of Forced Labor:

- **Agricultural Practices:** Discuss how enslaved Africans were often forced to work on plantations, including agricultural tasks like farming and gardening.
- **Plant Knowledge:** Explore the potential knowledge and skills enslaved Africans may have brought with them, such as traditional plant-based medicine or agricultural techniques.

2. Food Justice and Equity:

- **Access to Healthy Food:** Discuss the historical and ongoing disparities in access to healthy food, particularly for marginalized communities.
- **Sustainable Agriculture:** Explore how sustainable agriculture practices can contribute to food justice and environmental sustainability.

3. Cultural Diversity and Exchange:

- **Indigenous Knowledge:** Discuss the contributions of Indigenous peoples to horticulture and agriculture, including plant domestication and traditional ecological knowledge.
- **Cultural Exchange:** Explore how cultural exchange and the sharing of knowledge can lead to innovation and progress in horticulture.

4. Ethical Considerations and Social Responsibility:

- **Ethical Consumption:** Discuss the ethical implications of food choices and the importance of supporting sustainable and fair-trade practices.
- **Environmental Stewardship:** Explore the role of horticulture in environmental conservation and restoration.
- **Fair Labor Practices:** Discuss the importance of fair labor practices in agriculture and the challenges

faced by agricultural workers.

By incorporating these themes into nursery landscaping and gardening lessons, students can develop a deeper understanding of the historical and social context of agriculture, as well as the ethical and environmental implications of their work. This can help them become more responsible and socially conscious professionals in the field.

Career Readiness, Life Literacies, & Key Skills

TECH.9.4.12.CI.1	Demonstrate the ability to reflect, analyze, and use creative skills and ideas (e.g., 1.1.12prof.CR3a).
TECH.9.4.12.CI.2	Identify career pathways that highlight personal talents, skills, and abilities (e.g., 1.4.12prof.CR2b, 2.2.12.LF.8).
TECH.9.4.12.CI.3	Investigate new challenges and opportunities for personal growth, advancement, and transition (e.g., 2.1.12.PGD.1).
TECH.9.4.12.CT.1	Identify problem-solving strategies used in the development of an innovative product or practice (e.g., 1.1.12acc.C1b, 2.2.12.PF.3).

Instructional Strategies, Learning Activities, and Levels of Blooms/DOK

- Philadelphia Flower Show
- NJ State Horticultural Expo
- Student Compete in (CDE)
- Greenhouse Aquaponic
- Greenhouse Hydroponics

- Small group activity
- Caring for fresh cut flowers
- Cooperative Learning
- Feeding Tilapia fish
- Field Trips
- Greenhouse routine Maintenance
- Individual project
- Internet Research
- Landscaping Maintenance ofGreenhouse grounds and courtyard
- Online Activity
- Organic fruit and plant Production
- Participating in CSA
- Partner Project/Activity
- Scouting Greenhouse plants

- Teacher Lecture/Notes
- Watering plants

Modifications

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ELL Modifications

- Choice of test format (multiple-choice, essay, true-false)
- Continue practicing vocabulary
- Provide study guides prior to tests
- Read directions to the student
- Read test passages aloud (for comprehension assessment)
- Vary test formats

504 and IEP Accommodations & Modifications

- Allow for redos/retakes
- Assign fewer problems at one time (e.g., assign only odds or evens)
- Differentiated center-based small group instruction
- Extra time on assessments
- Highlight key directions
- If a manipulative is used during instruction, allow its use on a test
- Opportunities for cooperative partner work
- Provide reteach pages if necessary
- Provide several ways to solve a problem if possible
- Provide visual aids and anchor charts
- Test in alternative site
- Tiered lessons and assignments
- Use of a graphic organizer
- Use of concrete materials and objects (manipulatives)
- Use of word processor

Gifted and Talented

- Alternate assignments/enrichment assignments
- Enrichment projects
- Extension activities
- Higher-level cooperative learning activities
- Pairing direct instruction with coaching to promote self-directed learning
- Provide higher-order questioning and discussion opportunities
- Provide texts at a higher reading level
- Tiered assignments
- Tiered centers

At Risk

- Additional time for assignments
- Adjusted assignment timelines
- Agenda book and checklists
- Answers to be dictated
- Assistance in maintaining uncluttered space
- Books on tape
- Concrete examples
- Extra visual and verbal cues and prompts
- Follow a routine/schedule
- Graphic organizers
- Have students restate information
- No penalty for spelling errors or sloppy handwriting
- Peer or scribe note-taking
- Personalized examples
- Preferential seating
- Provision of notes or outlines
- Reduction of distractions
- Review of directions
- Review sessions
- Space for movement or breaks
- Support auditory presentations with visuals
- Teach time management skills
- Use of a study carrel
- Use of mnemonics
- Varied reinforcement procedures
- Work in progress check

Formative Assessment

- Class Discussion
- Group Work
- Guided Practice
- Performance Assessment
- Presentations
- Projects
- Warm up

Alternative Assessments

Alternative assessments:
Performance tasks
Project-based assignments
Problem-based assignments
Presentations
Reflective pieces
Concept maps
Case-based scenarios
Portfolio

Benchmark Assessments

Benchmark Assessments:
Skills-based assessment
Reading response
Writing prompt
Lab practical

Summative Assessment

- MPA
- Nocti
- Performance assessment
- Test/Quizzes
- Unit Assessment

Resources & Materials

- aged.org
- ffa.org
- internet
- mycaert.com
- Powerpoint Presentation
- smartboard
- Video streaming

Technology

TECH.8.1.12	Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.
TECH.8.1.12.A	Technology Operations and Concepts: Students demonstrate a sound understanding of technology concepts, systems and operations.
TECH.8.1.12.A.CS2	Select and use applications effectively and productively.
TECH.8.1.12.C.CS1	Interact, collaborate, and publish with peers, experts, or others by employing a variety of digital environments and media.
TECH.8.1.12.C.CS2	Communicate information and ideas to multiple audiences using a variety of media and formats.
TECH.8.1.12.C.CS3	Develop cultural understanding and global awareness by engaging with learners of other cultures.
TECH.8.1.12.C.CS4	Contribute to project teams to produce original works or solve problems.
TECH.8.1.12.E.1	Produce a position statement about a real world problem by developing a systematic plan of investigation with peers and experts synthesizing information from multiple sources.
TECH.8.1.12.E.CS4	Process data and report results.
TECH.8.2.12.A	The Nature of Technology: Creativity and Innovation: Technology systems impact every aspect of the world in which we live.