RCHS

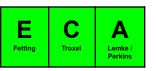
Course:

Plant Science

Grade: 9-10

Tier:

Approved:



PLC Question #1: What do we want all students to know and be able to do?

Unit 1: Importance of Plants ✓		Unit 2: Plant Anatomy and Classification ✓		Unit 3: Greenhouse Management ✓			
 Priority Standard(s) AFNR.PS.1: Students will examine the components, applications, historical development, global implications, future trends, and career opportunities of the plant industry. 		 Priority Standard(s) AFNR.PS.2: Students will apply knowledge of plant classification, anatomy, and physiology to the production and management of plants. 		 Priority Standard(s) AFNR.PS.3: Students will evaluate plant growth requirements and develop a plant management plan. AFNR.PS.4: Students will propagate, culture, harvest, and market plants. 			
Supporting Standard(s) ■ N/A		Supporting Standard(s) • N/A		Supporting Standard(s) • N/A			
Learning Outcomes		Learning Outcomes		Learning Outcomes			
Students need to know (Learning Priorities)	DOK Level	Students need to know (Learning Priorities)	DOK Level	Students need to know (Learning Priorities)	DOK Level		
 AFNR.PS.1.B: Describe global distribution of plant specimens. 		AFNR.PS.2.A: Classify agricultural plants according to taxonomy systems		AFNR.PS.3.A: Determine influence of environmental factors on plant growth.			
 AFNR.PS.1.C: Describe how data influences plant systems. 		 AFNR.PS.2.B: Apply knowledge of plant anatomy and functions of plant structures to activities associated with plant systems. 		 AFNR.PS.4.A: Demonstrate plant propagation techniques 			
Students will understand (Performance Indicators)	DOK Level	Students will understand (Performance Indicators)	DOK Level	Students will understand (Performance Indicators)	DOK Level		
 AFNR.PS.1.B.i.2: Classify plants by origin and compare economics of plant distribution and supply chain. 		 AFNR.PS.2.A.i.5: Identify agriculturally important plants by scientific name. 		 AFNR.PS.3.A.i.1.a: Describe the qualities of light that affect plant growth. 			
AFNR.PS.1.C.i.4: Predict trends in plant data.		 AFNR.PS.2.B.i.3: Explain functions and components of seeds and fruit. 		 AFNR.PS.3.A.i.1.b: Describe plant responses to light color, intensity, and duration. 			
		AFNR.PS.2.B.i.4: Identify the components, types, and functions of plant roots.		 AFNR.PS.3.A.i.1.c: Describe the effects that air, temperature, and water have on plant metabolism and growth. 			
		AFNR.PS.2.B.i.5: Discuss leaf morphology and the functions of leaves. AFNR.RS.2.B.i.6: Ideatify the companyon and and are also also are also		AFNR.PS.3.A.i.1.d: Determine optimal air, temperature, and water conditions for plant			
		 AFNR.PS.2.B.i.6: Identify the components and functions of plant stems. 		growth. • AFNR.PS.4.A.a.3.a: Produce herbaceous,			
		 AFNR.PS.2.B.i.7: Identify the components of a flower and their functions 		softwood, or hardwood cuttings. • AFNR.PS.4.A.b.1: Demonstrate sowing			
		 AFNR.PS.2.B.i.8: Draw or build a plant cell with its organelles. 		techniques and provide favorable conditions for seed germination.			

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Students will do (Active Application)	DOK Level	Students will do (Active Application)	DOK Level	AFNR.PS.4.A.i.2: Conduct tests associated with seed germination rates, viability, and vigor. Ottoday to will do (Active Application)	DOK Level	
Data and Trends in Plant Systems I can predict trends in plant data and how they affect agricultural production and sustainability. I can analyze how advancements in technology influence the future of the plant industry. Careers in the Plant Industry I can identify various career opportunities within the plant industry and their roles in global agriculture and how they contribute to food production, conservation, and sustainability. I can research and report on the diversity of plant system career pathways and their impact on global economies.		Plant Classification and Taxonomy I can classify agricultural plants based on taxonomy systems. I can compare different plant classification methods and explain their importance in agriculture. Plant Anatomy and Functions I can explain the functions and components of seeds and fruit. I can identify the components, types, and functions of plant roots. I can discuss leaf morphology and describe the functions of leaves in plant growth and development I can identify the components and functions of plant stems and their role in nutrient and water transport. I can identify the components of a flower and explain their functions in plant reproduction. Plant Structures and Cellular Biology I can draw or build a model of a plant cell and label its organelles. I can explain how different plant structures work together to support plant growth and reproduction. I can analyze how plant anatomy influences plant health, productivity, and management in agriculture.		Environmental Factors and Plant Growth I can describe the qualities of light that affect plant growth. I can explain how plants respond to different light colors, intensities, and durations. I can describe how air, temperature, and water impact plant metabolism and growth. I can determine the optimal air, temperature, and water conditions for healthy plant growth. Plant Propagation Techniques I can demonstrate plant propagation techniques, including herbaceous, softwood, and hardwood cuttings. I can use proper sowing techniques and create favorable conditions for seed germination. I can conduct tests to determine seed germination rates, viability, and vigor. Greenhouse Management and Plant Care I can evaluate how environmental factors in a greenhouse setting influence plant health and productivity. I can develop a plant management plan that includes proper watering, lighting, and temperature control. I can monitor plant growth and make adjustments to greenhouse conditions for optimal results.		
Domain-specific Vocabulary		Domain-specific Vocabulary		Domain-specific Vocabulary		
 agronomy cereal grain fiber crops fibers field crops floriculture foliage food crop 		 angiosperms annuals biennials bryophytes Carl von Linne common name conifers Cotyledon 		 Pest Irrigation Hanging basket Pots Grafting Seedling Germination Pruning 		

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 horticulture • cultivar Hydroponic forage deciduous Flood table forestry dichotomous key • Drip irrigation Sprinkler irrigation fruit dicots grain crops Evergreen grasses ferns herb gymnosperms horticulture herbaceous legumes perennials nursery/landscape monocots nut crops nomenclature oil crops perennials scientific name olericulture ornamental horticulture species plant domestication taxonomy plant science tracheophytes pomology varieties spice vascular plants winter annuals sucrose sugar crops tree farms woody perennial turf

vegetable, fruit, and nut crops



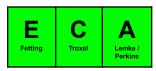
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PLC Question #1: What do we want all students to know and be able to do?

Unit 4: Floriculture and Landscape Design ✓	Unit 5: Agronomy 🔽				
 Priority Standard(s) AFNR.PS.6: Students will employ elements of design to enhance an environment. 	 Priority Standard(s) AFNR.PS.3: Students will evaluate plant growth requirements and develop a plant management plan. AFNR.PS.4 Students will propagate, culture, harvest, and market plants. AFNR.PS.5 Students will recognize different systems in which plants grow. 				
Supporting Standard(s) • N/A		Supporting Standard(s)			
Learning Outcomes		Learning Outcomes			
Students need to know (Learning Priorities)	DOK Level	Students need to know (Learning Priorities)	DOK Level		
 AFNR.PS.6.A: Create landscape designs using plants. AFNR.PS.6.B: Create floral and other non-landscape designs using plants. 		 AFNR.PS.3.C: Develop and implement a fertilization plan for specific plants in various production systems, including agronomy, fruit systems, gardens, nurseries, or CEA/greenhouse crops. AFNR.PS.4.E: Harvest, handle, and store crops. AFNR.PS.5.D: Manage equipment in a plant-production system. 			
Students will understand (Performance Indicators)	DOK Level	Students will understand (Performance Indicators)	DOK Level		
 AFNR.PS.6.A.i.1: Locate the design elements in a landscape. AFNR.PS.6.A.i.2: Classify plants used in landscaping. AFNR.PS.6.A.i.4.a: Analyze a landscape for functionality, design, and purpose. AFNR.PS.6.B.i.1: Locate the design elements in non landscaping designs. AFNR.PS.6.B.i.4.a: Analyze a floral design, interior scape, floral arrangement, or other design using plants. 		 AFNR.PS.3.C.b.2: Identify essential nutrients for plant growth and development, and describe major functions AFNR.PS.3.C.b.3: Identify fertilizer sources of essential plant nutrients. AFNR.PS.4.E.b.1: Describe how agricultural crops travel from farm to table. AFNR.PS.4.E.i.2: Identify storage methods for plants and plant products. AFNR.PS.5.C.b.1: Recognize tasks that need to be completed in a plant production system. AFNR.PS.5.D.i.1.a: Research equipment needs and use for a plant-production system. 			
Students will do (Active Application)	DOK Level	Students will do (Active Application)	DOK Level		
 Landscape Design and Plant Selection I can identify and explain the elements of design used in landscaping. I can classify plants used in landscaping based on their characteristics and functions. I can analyze a landscape for functionality, design, and purpose. Floral and Interior Plant Design		 Plant Growth and Fertilization I can identify essential nutrients for plant growth and development and describe their major functions. I can identify fertilizer sources of essential plant nutrients and explain their role in plant health. 			
 I can identify the elements of design in floral arrangements and other non-landscape a plant designs. I can analyze a floral arrangement, interior scape, or other plant-based design for 		 Harvesting and Storing Crops I can describe how agricultural crops travel from farm to table, including the steps involved in harvesting, handling, and processing. 			

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• I can identify different storage methods for plants and plant products to ensure quality balance, harmony, and visual appeal. • I can apply principles of design to create floral arrangements and other decorative and prevent spoilage. • I can explain the importance of proper harvesting techniques to maximize crop yield plant displays. and quality. **Enhancing Environments Through Design** • I can explain how landscape and floral design contribute to aesthetics, functionality, Plant Production Systems and Equipment Management and sustainability. • I can recognize tasks that need to be completed in a plant production system to • I can evaluate how plant selection and placement influence the success of a design. ensure effective and efficient operation. • I can research equipment needs for a plant-production system and describe their • I can use creativity and problem-solving skills to design plant-based environments that appropriate use to enhance plant growth and productivity. enhance spaces. • I can demonstrate the proper maintenance and use of equipment in plant production systems to ensure their longevity and effectiveness. **Domain-specific Vocabulary** Domain-specific Vocabulary Aesthetic Agronomy Balance Crop rotation Color Theory Soil fertility Contrast Monoculture • Cover crops Focal Point Functionality • Green manure Symmetry Tillage No-till farming Proportion Hardscape Precision agriculture Perennial plants Irrigation Annual plants Fertilizer Hydroponics Pesticides • GMO (Genetically Modified Organism) Yield Soil erosion Agrochemical Plant breeding Compost Soil pH Legume Pest management Biodiversity Soil structure