

Crop Management & Agronomy

Summarize principles of taxonomic systems to classify plants. [AFNR.HS.12.1](#)

- a** Compare, contrast, and classify plants in a variety of areas (e.g., taxonomy, life cycle, plant use, structure). [AFNR.HS.12.1.A](#)
- b** Describe how classification is used globally in plant identification. [AFNR.HS.12.1.B](#)
- c** Describe the importance of scientific nomenclature when identifying plants and give an example of a scientific name in association with its common name. [AFNR.HS.12.1.C](#)

Evaluate soil nutrients and soil management for healthy plant growth. [AFNR.HS.12.2](#)

- a** Identify the essential nutrients and their functions necessary for plant growth and development. [AFNR.HS.12.2.A](#)
- b** Analyze the effects and recognize environmental causes of nutrient deficiencies and toxicities. [AFNR.HS.12.2.B](#)
- c** Describe the influence of pH on the availability of nutrients in plant health. [AFNR.HS.12.2.C](#)
- d** Identify fertilizer sources of essential nutrients; explain and calculate fertilizer formulations and describe different methods of fertilizer application. [AFNR.HS.12.2.D](#)
- e** Summarize production methods focused on soil management (e.g., crop rotation, companion planting, cover crops). [AFNR.HS.12.2.E](#)
- f** Summarize the impact of environmental factors on nutrient availability. [AFNR.HS.12.2.F](#)

Develop pest control measures to minimize the impact on agronomic and horticultural crops. [AFNR.HS.12.3](#)

- a** Identify and categorize abiotic and biotic plant pests, diseases, and disorders. [AFNR.HS.12.3.A](#)
- b** Identify and assess local major weeds, insect pests, and infectious and noninfectious plant diseases. [AFNR.HS.12.3.B](#)
- c** Examine the life cycle of major plant pests and diseases. [AFNR.HS.12.3.C](#)
- d** Predict pest and disease problems based on environmental conditions and life cycles. [AFNR.HS.12.3.D](#)

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- e Identify and summarize pest control strategies associated with integrated pest management and the importance of determining economic threshold.** [AFNR.HS.12.3.E](#)
 - f Distinguish between risks and benefits associated with the materials and methods used in plant pest management.** [AFNR.HS.12.3.F](#)
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Summarize concepts of plant development through the selection, planting, and growing of seeds and plants, based on global demand, economic importance, and growing conditions. [AFNR.HS.12.4](#)

- a Summarize the purity of plant production material (virus index, invasive species, seed banks).** [AFNR.HS.12.4.A](#)
 - b Analyze how mechanical planting equipment performs soil preparation and seed placement.** [AFNR.HS.12.4.B](#)
 - c Determine desired seeding rate and/or numbers of vegetative materials needed for specified plant population or desired quantity of finished plants.** [AFNR.HS.12.4.C](#)
 - d Observe environmental conditions during the germination, growth, and development of a crop.** [AFNR.HS.12.4.D](#)
 - e Demonstrate proper techniques to control and manage plant growth through mechanical, cultural, or chemical means.** [AFNR.HS.12.4.E](#)
 - f Compare and contrast the technologies used in plant production.** [AFNR.HS.12.4.F](#)
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Summarize the processes in harvesting, transporting, and storing crops according to current industry standards. [AFNR.HS.12.5](#)

- a Identify and analyze processes used by mechanical harvesting methods, including ensuring safety measures.** [AFNR.HS.12.5.A](#)
 - b Evaluate crop yield and loss data and make recommendations to reduce crop loss.** [AFNR.HS.12.5.B](#)
 - c Demonstrate techniques for grading, handling, and packaging plants and plant products for distribution.** [AFNR.HS.12.5.C](#)
 - d Analyze practices used to maintain a safe product through harvest, processing, storage, and shipment (e.g., Food Safety Modernization Act, Good Agricultural Practices).** [AFNR.HS.12.5.D](#)
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Evaluate principles and practices of sustainable cropping systems to plant production to recommend the ideal system for their local community. [AFNR.HS.12.6](#)

- a Identify the current topics in crop production and the role those topics play in management and production of agronomic crops.** [AFNR.HS.12.6.A](#)
- b Assess the importance of long-term impacts on sustainable agriculture systems in relation to global food security.** [AFNR.HS.12.6.B](#)
- c Analyze the alignment of modern technologies used in production systems (e.g., precision agriculture, gene editing technologies).** [AFNR.HS.12.6.C](#)

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- d Describe sustainable agricultural practices and how they relate to conventional agricultural practices.** AFNR.HS.12.6.D
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- e Compare and contrast differing research conclusions related to environmental factors on sustainable systems.** AFNR.HS.12.6.E