

Plant Science

Synthesize the principles of taxonomic systems to classify plants. [AFNR.HS.25.1](#)

- a** Classify plants according to the hierarchical classification system, life cycles, plant use, and as monocotyledons or dicotyledons. [AFNR.HS.25.1.A](#)
- b** Describe how classification is used globally in plant identification. [AFNR.HS.25.1.B](#)
- c** Demonstrate the hierarchical classification of an agronomic plant and an ornamental plant. [AFNR.HS.25.1.C](#)
- d** 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.25.1.D](#)

Summarize principles of plant anatomy to plant production and management. [AFNR.HS.25.2](#)

- a** Compare and contrast morphological characteristics of different plant types (e.g., woody and herbaceous plants). [AFNR.HS.25.2.A](#)
- b** Identify role of seed and fruit structures in plant culture and use. [AFNR.HS.25.2.B](#)
- c** Compare the functions, types, and parts of plant roots and stems. [AFNR.HS.25.2.C](#)
- d** Identify and describe the morphological characteristics and functions of different types of leaves. [AFNR.HS.25.2.D](#)
- e** Identify role of flower structures to plant breeding, production, and use. [AFNR.HS.25.2.E](#)
- f** Describe the structures and functions of plant cells and cell organelles. [AFNR.HS.25.2.F](#)

Evaluate knowledge of photosynthesis and respiration to make decisions on plant production and management. [AFNR.HS.25.3](#)

- a** Identify the processes of photosynthesis and its significance to plant life. [AFNR.HS.25.3.A](#)
- b** Summarize the stages of cellular respiration and the resulting products and byproducts. [AFNR.HS.25.3.B](#)
- c** Explain the pathway of water and nutrients entering and within plants. [AFNR.HS.25.3.C](#)
- d** Describe the role of plant structures in primary plant growth (e.g., apical meristem). [AFNR.HS.25.3.D](#)

e Identify and categorize the five groups of naturally occurring plant hormones and synthetic growth regulators. [AFNR.HS.25.3.E](#)

f Compare and contrast the effects of transpiration and translocation on plants within different plant species. [AFNR.HS.25.3.F](#)

Analyze sexual and asexual plant propagation techniques to successfully grow and propagate plants. [AFNR.HS.25.4](#)

a Determine the purpose of and types of reproduction methods within the production of specific plants. [AFNR.HS.25.4.A](#)

b Contrast types of pollination and/or fertilization of flowering plants. [AFNR.HS.25.4.B](#)

c Demonstrate various planting techniques for providing favorable conditions for seed germination. [AFNR.HS.25.4.C](#)

d Summarize optimal conditions for asexual propagation and demonstrate different techniques used to propagate plants. [AFNR.HS.25.4.D](#)

e Describe environmental conditions and types of growing media conducive to optimal plant growth and development. [AFNR.HS.25.4.E](#)

f Identify structures and technologies used for controlled atmosphere plant production. [AFNR.HS.25.4.F](#)

Summarize management of plant development through the selection, planting, and growing of seeds and plants based on global demand, economic importance, and growing conditions. [AFNR.HS.25.5](#)

a Summarize the benefits of preparing growing media prior to planting. [AFNR.HS.25.5.A](#)

b Summarize the stages of plant growth and benefits of controlling plant growth. [AFNR.HS.25.5.B](#)

c Summarize the uses of different growing methods for plant production (e.g., vertical farming, soil grown, container gardening, hydroponics, and aquaponics). [AFNR.HS.25.5.C](#)

Summarize harvest, transporting, and storage of crops according to current industry standards. [AFNR.HS.25.6](#)

a Identify harvesting methods and equipment, incorporating safety measures. [AFNR.HS.25.6.A](#)

b Identify plant preparation methods for storing and shipping plants and plant products. [AFNR.HS.25.6.B](#)

c Assess the stage of growth to determine crop maturity or marketability and demonstrate proper harvesting techniques. [AFNR.HS.25.6.C](#)
