Arkansas CTE

Greenhouse Management: Grades 10, 11, 12

Adopted 2007

Greenhouse Management

1.1 Define terminology

1. Prepare a list of terms with definitions 1.1.1

1.2 Discuss the role greenhouses play in the agricultural industry

1. Visit green houses in the local area to determine what crops are grown 1.2.1

1.3 Identify careers in greenhouse management

1. Research a career in greenhouse management to determine educational requirements, working conditions, and salary 1.3.1

1.4 Discuss the FFA opportunities for students interested in greenhouse management

1. Participate in FFA activities related to greenhouse management 1.4.1

Safety in the Greenhouse

2.1 Define terminology

1. Prepare a list of terms with definitions 2.1.1

2.2 Discuss the meaning and importance of safety and safe work in the greenhouse

1. Relate examples of safety hazards in the greenhouse, including equipment used in crop production and the inputs applied to plants such as pesticides and fertilizers 2.2.1
2. Name examples of accidents that have occurred locally in greenhouses 2.2.2

2.3 Identify hazards in the greenhouse

1. Survey hazardous situations in local greenhouse facilities and prescribe the appropriate safety measures to be taken; propose ways of eliminating or reducing the risk of these hazards 2.3.1

2.4 Describe the importance of personal safety in the greenhouse

1. Identify and properly use appropriate Personal Protective Equipment (PPE) in the greenhouse 2.4.1
2. Calculate the cost of PPE for an individual involved in the greenhouse 2.4.2
3. Work together with others to promote safety in the greenhouse 2.4.3
4. Take a test on greenhouse safety before beginning work with plants 2.4.4

Basic Greenhouse Structures

3.1 Define terminology

1. Prepare a list of terms with definitions 3.1.1

3.2 List types of greenhouse structures; even span, Gothic arch, Quonset, ridge and furrow, and uneven-span

1. Identify greenhouse styles in the region 3.2.1

3.3 List common framing materials used for greenhouses; aluminum, steel, wood

1. Identify framing materials used in greenhouse in the region 3.3.1

3.4 Compare the basic types of greenhouse coverings; glass, polyethylene, and rigid structured sheets

1. Report on the characteristics, advantages, and disadvantages of basic greenhouse coverings 3.4.1

3.5 Discuss the uses of cold frames

1. Build a cold frame 3.5.1
2. Report on the characteristics of a cold frame 3.5.2

3.6 Describe the uses of shade structures

1. Build shade structures 3.6.1
2. Report on the characteristics of shade structures 3.6.2

Greenhouse Systems

4.1 Define terminology

1. Prepare a list of terms with definitions 4.1.1

4.2 Compare commonly used heating systems; forced-air heaters, infrared radiant heaters, hot water heat, and steam heat

1. Report on the features, advantages, and disadvantages of heating systems 4.2.1

4.3 Discuss common cooling and ventilation systems; fan-and-pad cooling system, fog-evaporative cooling system fan-tube ventilation, and natural ventilation

1. Report on the features, advantages, and disadvantages of cooling systems 4.3.1
2. Report on the features, advantages, and disadvantages of ventilation systems 4.3.2

4.4 Describe commonly used watering systems; capillary mat system, hose watering, intermittent mist system, overhead watering, perimeter irrigation, soaker hose system, and tube irrigation

1. Visit greenhouses to observe various systems in operation 4.4.1

4.5 Describe the use of curtains; energy curtains, shade curtains, and short-day curtains

1. Visit greenhouses to observe curtain systems in operation 4.5.1

4.6 Discuss supplemental lighting; high intensity discharge (HID) lighting systems, incandescent lighting, and fluorescent lighting

1. Visit greenhouses to observe supplemental lighting systems in operation 4.6.1

Sexual Propagation of Plants

5.1 Define terminology

1. Prepare a list of terms with definitions 5.1.1

5.2 List the environmental factors necessary for germination; light or dark, temperature, moisture, and air

1. Demonstrate through experimentation how light or dark, temperature, moisture, and air affect seed germination 5.2.1
2. Apply recommended environmental conditions to seed germination 5.2.2

5.3 Cite the characteristics of a good germination medium; fine texture, water holding capacity, aeration, and sterile

1. Select germination media based on the characteristics of the media 5.3.1

5.4 Explain the importance of proper stage of growth for transplanting seedlings

1. Transplant seedlings 5.4.1

Asexual Propagation Methods

6.1 Define terminology

1. Prepare a list of terms with definitions 6.1.1

6.2 Explain how cuttings are taken and made to root; leaf bud cutting, leaf cutting, root cutting, and stem cutting

1. Demonstrate the correct procedures for taking and rooting different types of cuttings 6.2.1

6.3 Outline the process involved in division and separation of plants

1. Demonstrate the correct procedures for division of plants 6.3.1

6.4 Discuss propagation by layering

1. Demonstrate the correct procedure for layering 6.4.1

6.5 Discuss the method of tissue culture

1. Perform a tissue culture procedure 6.5.1

Integrated Pest Management

7.1 Define terminology

1. Prepare a list of terms with definitions 7.1.1

7.2 Differentiate between biological, cultural/physical control, and chemical pest management practices

1. Given a pest problem, provide suggested management practices 7.2.1

7.3 List the proper equipment and clothing to use when applying chemicals; respirator, goggles, rubber gloves, rubber boots, long sleeved shirt, and overalls/apron

1. Demonstrate the proper use of Personal Protective Equipment (PPE) 7.3.1

7.4 Explain the importance of pesticide label information

1. Analyze pesticide labels to determine toxicity and directions for use 7.4.1

Producing Greenhouse Crops

8.1 Define terminology

1. Prepare a list of terms with definitions 8.1.1

8.2 Identify the major greenhouse crops; African violet, bedding plants, calceolaria, chrysanthemum, cineraria, cyclamen, Easter lily, florist's azalea, florist's hydrangea, foliage plants, gloxinia, holiday cacti, Kalanchoe, orchids, Persian violet, poinsettia, and primrose

1. Visit a production greenhouse at different times of the year and identify the major crops 8.2.1

8.3 Explain the difference between day-neutral plants, long-day plants, and short-day plants

1. Adjust lighting conditions in the greenhouse to promote vegetative growth or flowering 8.3.1

8.4 Discuss the influence of temperature on greenhouse crop growth and development; DIF, thermoperiodism, and vernalization

1. Manipulate temperatures to regulate plant growth 8.4.1

8.5 Explain the practices of pinching and disbudding

1. Pinch or disbud greenhouse crops `8.5.1`

8.6 Discuss scheduling of crops

1. Prepare a growing schedule for greenhouse crops `8.6.1`

Marketing Greenhouse Crops

9.1 Define terminology

1. Prepare a list of terms with definitions `9.1.1`

9.2 Discuss the factors to consider in selecting greenhouse crops

1. Conduct a market analysis to determine greenhouse crops that would sell well in the local area `9.2.1`

9.3 Determine retail prices for greenhouse products

1. Calculate prices for greenhouse products taking into account overhead costs, material costs, labor costs, etc. `9.3.1`

9.4 Explain seasonal markets for greenhouse crops

1. Develop a calendar showing yearly greenhouse crop rotations `9.4.1`