Course: AG 514-Botany/Horticulture Plant Science

Unit	Objective	CAERT Lesson Plan Library	Unit	Problem Area	Lesson
A. Elementary Study of Soils	1. List the reasons why soils are important	Animal, Plant, and Soil Science	C	6	1
	2. Discuss the functions of soil as it relates to plant growth, development, and maintenance		C	6	1
	3. Select factors that affect soil formation		C	6	2
	4. List the four physical properties of soil		C	6	1
	5. Identify soil particles according to size, and discuss what methods are used to determine soil texture		C	6	4
	6. Identify five kinds of soil structure		C	6	4
	7. Match the terms indicating soil color and depth with their corrct descriptions		C	6	3
	8. Label an illustration showing the different layers of a soil profile		C	6	5
	9. Discuss how acidity and alkalinity effect the soil and methods of correcting pH problems		C	4,8	5,1
B. Organic Matter	1. Match terms and definitions associated with organic matter	Horticulture	A	4	2
	2. List the importance of organic matter to plant production		A	4	4
	3. List the factors affecting the rate of organic matter decomposition		A	4	4
	4. List the basic ways in which nutrients obtained from organic matter affect the soil		A	4	4
	5. Identify the factors that cause loss of organic matter from soil				
	6. Name the types of organic matter which can be applied to soil	Animal, Plant, and Soil Science	C	8	2
	7. List the purposes of mulches	Horticulture	A	4	9
	8. Select the organic and inorganic mulches that are available				
	9. Select the factors to consider when choosing mulching material				
C. Potting Soil and Media	1. List the reasons for variation in types of soils	Horticulture	A	4	1,2
	2. Discuss how root zone affects the availability of plant nutrients		A	4	1,2
	3. Select plants tolerant to various pH ranges		A	4	1
	4. Test soils for pH levels				
	5. Develop a chart of planting media with the characteristics of each media				

	6. List several soil mixes identifying media data for each soil mix				
	7. Identify the correct fertilizers to add for various soil mixes				
	8. Sterilize a potting soil mix				
D. Soil Fertility	1. List the primary and secondary plant nutrients and describe the function of each for plant growth	Animal, Plant, and Soil Science	C	3,4	6,5
	2. Match nutrients to their correct plant deficiency symptoms		C	3,8	6,4
	3. Select from a list factors that influence the use of fertilizers		C	4,8	5,2
	4. List four sources of plant nutrients		C	3	6
	5. Match dry, liquid, and gaseous fertilizers with their correct description and use		C	8	2
	6. Calculate problems comparing fertilizer cost by comparing cost per pound of nutrients		C	8	2
	7. Discuss methods and procedures involved in collecting a representative soil sample		C	10	2
	8. Complete a soils test report form, and make fertilizer recommendations using the test analysis data				
	9. Identify and discuss methods of fertilizer application		C	8	3
E. Organic Fertilizers	1. Match terms and definitions associated with organic fertilizers	Animal, Plant, and Soil Science	C	8	2
	2. List sources of soil organic matter		C	8	2
	3. Identify how the soil temperature, aeration, moisture, and reactions affect the rate of decomposition or organic matter				
	4. Discuss the value of humus and organic fertilizers to soil fertility and plant growth				
	5. Describe how organic matter is produced				
	6. List the functions of growing a crop to produce organic matter				
	7. List the types of manures that can be produced				
	8. Select other sources of organic fertilizers		C	8	2
	9. List the disadvantages of organic fertilizers		C	8	2
	10. Demonstrate the ability to construct a compost pile				
F. Basic Plant Processes	1. List the important plant processes in food manufacture and growth	Animal, Plant, and Soil Science	C	3,4	3,1-4
	2. Explain why photosynthesis is an important process		C	3	3
	3. Explain the chemical process of photosynthesis		C	3	3
	4. List factors that affect photosynthetic rate		C	3	3
	5. Explain the chemical process of respiration		C	3	4

	6. Distinguish between photosynthesis and respiration characteristics		C	3	3 & 4
	7. Explain transpiration and list factors that affect transpiration rate		C	4	1
	8. Explain osmosis and the process of absorption by plant roots		C	2	2
	9. Label the parts of a common plant cell and describe the function of each plant part		C	2	2
G. Plant Growth and Development	1. List the stages of plant growth and development	Animal, Plant, and Soil Science	C	10	2
	2. Describe the requirements for good seed germination		C	3,5	1,1
	3. List factors that cause poor seed germination		C	3,5	1,1
	4. List the primary parts of and functions of a plant		C	2	2
	5. Identify two types of root systems		C	2	2
	6. Label a drawing showing the parts of a plant stem		C	2	2
	7. Match stem modifications with correct descriptive term		C	2	2
	8. List conditions affecting the vegetative growth of crop plants		C	3	5
	9. Discuss asexual and sexual reproduction in plants		C	5	1 & 2
	10. Label a drawing showing the parts of a complete flower		C	2	3
	11. Match types of flowers to their correct botanical description				
	12. List methods of pollination		C	5	1
H. Plant Growth Regulators	1. Match terms and definitions associated with plant growth regulators	Horticulture	A	2	8
	2. List the environmental factors that influence plant growth		A	2	7
	3. List the ways hormones influence plant growth		A	2	8
	4. Select statements that describe the effects of photoperiod on plant growth		A	2	7
	5. Name the photoperiod responses		A	2	7
	6. Explain how plants respond to day length		A	2	7
	7. Select statements that either describe how to shorten or lengthen the day for plants		A	2	7
	8. List the techniques for physical control over plant growth		A	2	7
	9. Identify as either true or false reasons for using chemical growth regulators		A	2	8
	10. List the biological factors that affect plant growth				
	11. List the controllable plant growth processes		A	2	7
	12. List the effects of chemicals on plant growth		A	2	8
	13. Identify the effects of growth regulators on plants		A	2	8
	14. List the important chemical growth regulator groups		A	2	8

	15. Describe statements as true or false as they relate to how auxins, gibberellins, kinins, dormins, or ithylenes affect plant growth and development		A	2	8
	16. Select statements that describe plant responses attributed to auxins		A	2	8
	17. List the uses of auxins		A	2	8
	18. List the important commercial uses for plant growth regulators		A	2	8
I. Seed Selection	1. List factors to consider in selecting high quality seed	Horticulture	A	3	2
	2. Discuss conditions that exist when good seed is not selected				
	3. List and describe the certifiable seed classes				
	4. List information required on certified seed tags				
	5. Discuss types and purposes of seed treatments				
	6. Discuss procedures to follow in handling and storing seed		A	3	2
	7. Calculate the value of pure live seed				
J. Seeding in Flats	1. Match terms and definitions associated with seeding in flats	Horticulture	A	3	2
	2. List the materials from which flats can be made				
	3. List the advantages and disadvantages of using flats for propagating				
	4. List the advantages and disadvantages of starting seedlings inside flats		A	3	2
	5. List the steps for seeding in flats		A	3	2
	6. List the information that should appear on the label of a flat after it has been planted		A	3	2
	7. Describe the procedure to follow after seeds have germinated in a flat		A	3	2
	8. Demonstrate the ability to build a flat and plant seeds in it				
K. Care and Transplanting of Seedlings	1. Match terms and definitions associated with care and transplanting of seedlings	Horticulture	A	3	2
	2. Describe how to care for young seedlings		A	3	2
	3. List the types of transplanting pots that are available				
	4. List the factors to consider when choosing plant containers				
	5. Describe the procedures to follow when transplanting seedlings		A	3	2
	6. List the steps of transplanting seedlings		A	3	2
	7. Describe how to harden seedlings				
	8. Demonstrate the ability to transplant seedlings properly		A	3	2

L. Introduction to Asexual Plant Propagation	1. Match terms and definitions relating to asexual plant propagation	Horticulture	A	3	3
	2. List the methods of asexual plant propagation		A	3	3
	3. List the reasons for using asexual propagation		A	3	3
	4. Select cuttings that require leaves and cuttings that do not require leaves		A	3	3
	5. List the main types of propagating by layering and the requirements for layering		A	3	4
	6. Describe propagation by division		A	3	4
	7. List the methods of propagating by budding		A	3	5
	8. List the methods of grafting		A	3	5
M. Propagation by Cuttings	1. Match terms and definitions associated with propagation by cuttings	Horticulture	A	3	3
	2. List treatments made to cuttings before placing them in rooting media		A	3	3
	3. List the basic kinds of plant wounding		A	3	3
	4. Explain the use of hormone treatment on cuttings		A	3	3
	5. Describe why storage and callusing are used with hardwood cuttings				
	6. Demonstrate the ability to make various types of wounds on cuttings				
	7. Demonstrate how to treat a cutting with hormone		A	3	3
	8. Demonstrate the ability to store and callus plant cuttings				
	9. Demonstrate the propagation of a coleus stem cutting				
	10. Demonstrate a leaf bud cutting		A	3	3
	11. Demonstrate a root cutting		A	3	3
N. Propagation by Layering and Division	1. List the advantages and disadvantages of propagation by layering	Horticulture	A	3	4
	2. List the types of layering		A	3	4
	3. Identify the steps in transplanting layering plants		A	3	4
	4. Demonstrate how to propagate by tip, simple, and air layering		A	3	4
	5. Name the types of plants propagated by division		A	3	4
	6. List the steps in divisional propagation		A	3	4
	7. Demonstrate propagation by division of perennials and bulbous plants		A	3	4
O. Propagation by Budding	1. Match terms and definitions associated with propagation by budding	Horticulture	A	3	5
	2. List the types of budding		A	3	5
	3. List the techniques used when propagating by budding		A	3	5
	4. List the precautions to be used with T-budding		A	3	5
	5. Describe patch budding and list the variations of patch budding		A	3	5

	6. Demonstrate the ability to T-bud and patch bud		A	3	5
P. Propagation by Grafting	1. Match terms and definitions associated with propagation by grafting	Horticulture	A	3	5
	2. List the reasons for using grafting		A	3	5
	3. Discuss the limitations of using grafting		A	3	5
	4. List the sequence of making a union graft				
	5. List the functions of the callus tissue				
	6. List the types of grafting that are used when the diameter of the stock and scion are similar, and when the diameter of the stock is greater than the scion		A	3	5
	7. Describe the qualities of a grafting wax				
	8. List the basic functions of grafting wax		A	3	5
	9. List the basic kinds of grafting waxes				
	10. Demonstrate the ability to perform the basic types of plant grafts		A	3	5
Q. Plant Identification	1. Discuss the system of plant classification	Animal, Plant, and Soil Science	C	2	1
	2. Identify the parts of simple and compound leaves		C	2	2
	3. Name the types of leaf arrangement, venation and margins		C	2,10	2,4
	4. Identify the types of leaf attachment to the stem		C	2,10	2,4
	5. Identify the parts of a stem		C	2	2
	6. List the types of stem modifications with their correct description		C	2	2
	7. Identify the parts of a perfect flower		C	2	3
	8. Identify the types of inflorescences				
	9. Identify common plants of economic impact to Idaho				
R. Plant Pests	1. Match terms and definitions associated with plant pests	Animal, Plant, and Soil Science	C	10	1
	2. List the basic methods of weed control		C	10	4
	3. Discuss weed competition and losses caused by weeds				
	4. Discuss how weeds spread		C	10	4
	5. Discuss methods of cultural, mechanical, chemical and biological weed control		C	10	4
	6. Identify the factors of a weed control program		C	10	4
	7. Select statements as they apply to non-selective and selective herbicide compounds		C	10	4
	8. Identify as true or false statements relating to pre-emergence and post-emergence weed control treatments		C	10	4
	9. List ways that insects cause losses in plants		C	10,11	5,1
	10. List beneficial effects of insects		C	10	1 & 5
	11. Identify the three regions of an insect body		C	10	5
	12. Match the way an insect feeds on plants with their correct description		C	10	1 & 5

	13. Label drawings showing the life cycles of various insects		C	10	5
	14. Discuss the importance of economics in relation to plant insect control		C	10,11	1,1
	15. Select from a list cultural, biological, and chemical control practices for insects		C	10	1 & 5
	16. Match classifications of insecticides to their correct description		C	10,11	1,1 & 2
	17. Identify the insects having an economic impact on Idaho agriculture				
S. Plant Disease Identification and Control	1. Identify by names, symptoms, and causal agents the diseases that have an economic impact on Idaho crops	Animal, Plant, and Soil Science	C	10	3
	2. Describe the life cycles of diseases		C	10	3
	3. Describe the ways and means diseases are spread		C	10	1
	4. Describe growing conditions and cultural practices favorable to common diseases		C	10	3
	5. Describe preventative measures for diseases		C	10	1 & 3
	6. Describe cultural and chemical control measures for diseases		C	10,11	1 & 3,5