Student's Name _____ **BOTANY/PLANT AND SOIL SCIENCE AG 0510**

Directions:	Evaluate the trainee using the rating scale below and check the appropriate number to indicate the degree of competency achieved. The numerical ratings of 3, 2, 1, and 0 are not intended to represent the traditional school grading system of A, B, C, D, and F. The descriptions associated with each of the numbers focus on level of student performance for each of the tasks listed below.
Rating Scale:	**0 - No Exposure** - no information nor practice provided during training program, complete training required. **1 - Exposure Only** - general information provided with no practice time, close supervision needed and additional training required. **2 - Moderately Skilled** - has performed independently during training program, limited additional training may be required. **3 - Skilled** - can perform independently with no additional training.

1. Number of Competencies Evaluated _____
2. Number of Competencies Rated 2 or 3 _____
3. Percent of Competencies Attained (2/1) _____

_____
Grade

_____ _____
Instructor Signature Date

01.0 Elementary Study of Soils
The student will be able to:

0 1 2 3		
☐☐☐☐	01.01	Select from a list the reasons why soils are important
☐☐☐☐	01.02	Discuss the function of soil as it relates to plant growth, development, and maintenance
☐☐☐☐	01.03	Select factors that affect sod formation
☐☐☐☐	01.04	List the four physical properties of soil
☐☐☐☐	01.05	Identify soil particles according to size, and discuss what methods are used to determine soil texture
☐☐☐☐	01.06	Identify five kinds of soil structure
☐☐☐☐	01.07	Match the terms indicating soil color and depth with their correct descriptions
☐☐☐☐	01.08	Label an illustration showing the different layers of a soil profile
☐☐☐☐	01.09	Discuss how acidity and alkalinity effect the soil and methods of correcting pH problems

02.0 Soil Fertility
The student will be able to:

0 1 2 3		
☐☐☐☐	02.01	Match primary and secondary nutrients to their correct function for plant growth
☐☐☐☐	02.02	Match plant nutrients to their correct deficiency symptoms
☐☐☐☐	02.03	Select from a list factors that influence the use of fertilizers
☐☐☐☐	02.04	List four sources of plant nutrients
☐☐☐☐	02.05	Match dry, liquid, and gaseous fertilizers with their correct description and use
☐☐☐☐	02.06	Calculate problems comparing fertilizer cost by comparing cost per pound of nutrients
☐☐☐☐	02.07	Discuss methods and procedures involved in collecting a representative soil sample
☐☐☐☐	02.08	Complete a soils test report form, and make fertilizer recommendations from the soil test analysis
☐☐☐☐	02.09	Identify and discuss methods of fertilizer application

03.0 Soil Conservation
The student will be able to:

0 1 2 3		
☐☐☐☐	03.01	List the types of soil erosion
☐☐☐☐	03.02	Select from a list factors that influence soil erosion
☐☐☐☐	03.03	Describe the four categories of water erosion
☐☐☐☐	03.04	Select conservation practices that reduce soil erosion
☐☐☐☐	03.05	List mechanical and cropping practices used to reduce water erosion
☐☐☐☐	03.06	Select from a list factors that determine, cropping system to use
☐☐☐☐	03.07	List three organizations involved with soil conservation

04.0 Introduction to Plant Science

The student will be able to:

0 1 2 3

☐☐☐☐ 04.01 List the necessities of life that are furnished by plants
☐☐☐☐ 04.02 List the major crops grown in the U.S.
☐☐☐☐ 04.03 List the crops of Idaho ranking them by production and compare that relationship to other states in the U.S.
☐☐☐☐ 04.04 Classify plants as cereal, root crop, tree crop, pulse oil seed, or forage crop
☐☐☐☐ 04.05 Match the percentage of land use in the U.S. and Idaho with its correct use
☐☐☐☐ 04.06 Match common crops of Idaho with their average yields
☐☐☐☐ 04.07 List factors that affect crop production
☐☐☐☐ 04.08 Discuss the purpose of the Crop Reporting Service and the Idaho Crop Improvement Association

05.0 Plant Anatomy

The student will be able to:

0 1 2 3

☐☐☐☐ 05.01 List the primary parts of a plant and their functions
☐☐☐☐ 05.02 List the parts of a cell and describe their functions
☐☐☐☐ 05.03 Discuss the types of tissues found in a plant

06.0 Basic Plant Processes

The student will be able to:

0 1 2 3

☐☐☐☐ 06.01 List the important plant processes in food manufacture and growth
☐☐☐☐ 06.02 Explain why photosynthesis is an important process
☐☐☐☐ 06.03 Explain the chemical process of photosynthesis
☐☐☐☐ 06.04 List factors that affect photosynthetic rate
☐☐☐☐ 06.05 Explain the chemical process of respiration
☐☐☐☐ 06.06 Distinguish between the characteristics of photosynthesis and respiration and describe their relationship
☐☐☐☐ 06.07 Explain transpiration and list factors that affect transpiration rate
☐☐☐☐ 06.08 Explain osmosis and the process of absorption by plant roots

07.0 Plant Growth and Development

The student will be able to:

0 1 2 3

☐☐☐☐ 07.01 List the stages of plant growth and development
☐☐☐☐ 07.02 Describe the requirements for good seed germination
☐☐☐☐ 07.03 List factors that cause poor seed germination
☐☐☐☐ 07.04 Identify two types of root systems
☐☐☐☐ 07.05 Label a drawing showing the parts of a plant stem
☐☐☐☐ 07.06 Match stem modifications with correct descriptive term
☐☐☐☐ 07.07 List conditions affecting the vegetative growth of plants
☐☐☐☐ 07.08 Discuss asexual and sexual reproduction in plants
☐☐☐☐ 07.09 Label a drawing showing the parts of a complete flower
☐☐☐☐ 07.10 Match types of flowers to their correct botanical description
☐☐☐☐ 07.11 List methods of pollination

08.0 Plant Identification

The student will be able to:

0 1 2 3

☐☐☐☐ 08.01 Discuss the system of plant classification
☐☐☐☐ 08.02 Identify the parts of simple and compound leaves
☐☐☐☐ 08.03 Name the types of leaf arrangement, venation and margins
☐☐☐☐ 08.04 Identify the types of leaf attachment to the stem
☐☐☐☐ 08.05 Identify the parts of a stem
☐☐☐☐ 08.06 List the types of stem modifications with their correct description
☐☐☐☐ 08.07 Identify the parts of a perfect flower
☐☐☐☐ 08.08 Identify the types of inflorescence

09.0 Weed Pests of Plants

The student will be able to:

0 1 2 3

☐☐☐☐ 09.01 Identify common plants of economic impact to Idaho
☐☐☐☐ 09.02 Discuss weed competition and losses caused by weeds
☐☐☐☐ 09.03 Discuss how weeds spread
☐☐☐☐ 09.04 Discuss methods of cultural, mechanical, chemical and biological weed control

10.0 Insect Pests of Plants

The student will be able to:

0 1 2 3		
☐☐☐☐	10.01	List ways that insects cause losses in plants
☐☐☐☐	10.02	Select from a list beneficial effects of insects
☐☐☐☐	10.03	Identify the three regions of an insect body
☐☐☐☐	10.04	Describe the way an insect feeds on plants
☐☐☐☐	10.05	Label a drawings showing the life cycles of various insects
☐☐☐☐	10.06	Discuss the importance of economics in relation to plant insect control
☐☐☐☐	10.07	Select from a list cultural biological, and chemical control practices for insects
☐☐☐☐	10.08	List the classifications of insecticides
☐☐☐☐	10.09	Identify the insects having an economic impact on Idaho agriculture

11.0 Plant Diseases

The student will be able to:

0 1 2 3		
☐☐☐☐	11.01	Identify by names, symptoms, and causal agents the diseases that have an economic impact on Idaho crops
☐☐☐☐	11.02	Describe the life cycles of diseases
☐☐☐☐	11.03	Describe the ways and means diseases are spread
☐☐☐☐	11.04	Describe growing conditions and cultural practices favorable to common diseases
☐☐☐☐	11.05	Describe preventative measures for diseases
☐☐☐☐	11.06	Describe cultural and chemical control measures for diseases

12.0 Biotechnology

The student will be able to:

0 1 2 3		
☐☐☐☐	12.01	Describe the technique of transferring genetic material into a chromosome
☐☐☐☐	12.02	Discuss the improvements made through genetic engineering to the plant industry
☐☐☐☐	12.03	Explain how tissue culture is used for plant development

13.0 Careers in Plant and Soil Science

The student will be able to:

0 1 2 3		
☐☐☐☐	13.01	Explore the careers that are available in plant and soil science
☐☐☐☐	13.02	List the requirements of gaining and keeping employment in the field of plant and soil science