OJT Training Module Cover Sheet

Title: 1019 Understand the effects of limiting layers on land use—overview.

Type: ☐ Skill **X** Knowledge

Performance Objective: Trainee will be able to …

- Understand why limiting soil layers are important and why they influence land use.

Target Proficiency:
☐ Awareness **X** Understanding ☐ Perform w/ Supervision
☐ Apply Independently ☐ Proficiency, can teach others

Trainer Preparation:

- Trainer should be familiar with the assigned reading/review material in the lesson plan that follows and select those relevant to your area for trainee review.
- Trainer should arrange a field tour in which limiting soil layers and the associated land use can be observed.

Special Requirements:
Initiate an external learning request with a SF-182 in Aglearn for this activity. Instructions and a template are located on the training webpages for OJT modules.

Prerequisite Modules:
None

Notes:
Additional skill development is available in module 1207 How to recognize limiting soil layers in your area.

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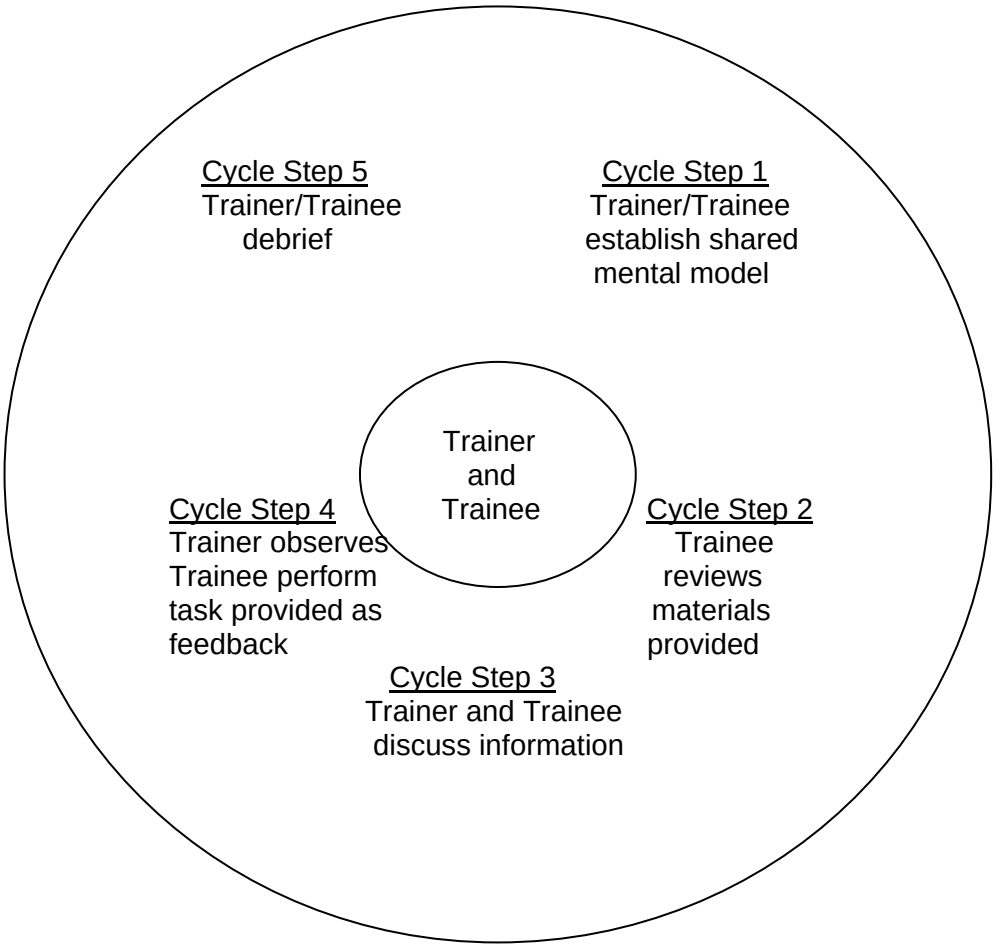
The Five-Step OJT Cycle for Declarative Training (Knowledge)



OJT Module Lesson

Title: 1019 Understand the effects of limiting layers on land use—overview.	
WHAT	**WHY, WHEN, WHERE, HOW, SAFETY, QUALITY**
Cycle step 1	Trainer and trainee review objectives of module.
Cycle step 2	Trainer and trainee access via the internet each of the following and read/review: • National Soil Survey Handbook 618: o **Restriction Kind, Depth, Thickness, and Hardness** for limiting layers recognized by the agency. These can be physical, chemical, or thermal properties that reduce the movement of water and air through the soil or that otherwise provide an unfavorable environment for roots. • Soil Quality Publications, as selected by the trainer as relevant to the area from the following: o Rangeland Information Sheets • **Rangeland Soil Quality – Compaction** • **Rangeland Soil Quality – Infiltration Soil** • **Rangeland Soil Quality -- Physical and Biological Soil Crusts** o Indicators for Soil Quality Evaluation • **Soil pH** o Resource Concerns • **Compaction** • **Available water capacity** o Note 10 • **Available Water Capacity** • **Bulk density** • **Infiltration** • **Soil crusts** o Agronomy Technical Notes • **Note 17-Soil Compaction: Detection, Prevention, and Alleviation** o Soil Quality - Urban Technical Notes • **Urban soil compaction**

Cycle step 3	Trainer discusses the three groups of limiting layers (physical, chemical, and thermal) with the trainee and categorizes the soil restrictions into these three groups. Trainer should describe which of the soil restrictions occur in the local area. Trainer provides examples of local area soil restrictions and the associated land use (rangeland, woodland, cropland, urban land) in areas where these restrictions occur. Items for discussion might include poor agricultural productivity or limited choice of crops in areas with physical restrictions, lack of agriculture in areas having chemical restrictions (natric horizons, ortstein, salic horizons, and sulfuric horizons), and the presence or absence of construction and the type of construction in areas having bedrock controlled landscapes. Areas with fragipans or densic materials may lead to a discussion of seeps and the impact on construction. Discuss the presence of human-manufactured materials and the common land use associated with these limiting layers.
Cycle step 4	Trainer asks trainee to identify relationships between limiting soil layers in the area and the current and potential land use. Use a map of the area or visit field locations known to have the kinds of restrictions discussed and verify the concepts presented.
Cycle step 5	Trainer and trainee can debrief the exercise and answer any questions. To add interest, trainer may choose to discuss restrictions found elsewhere and their significance to land use.

OJT Module Lesson Measurement of Learning

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WHAT	**WHY, WHEN, WHERE, HOW, SAFETY, QUALITY**
Trainee's learning is measured.	Have the trainee complete the attached quiz below to reinforce the concepts in this module.

SF-182

Trainee and/or supervisor access Aglearn to verify completion of the module via its SF-182.

Quiz

1. True or False? A crop field in which the soil is shallow to lithic bedrock is likely to produce limited yields and may require irrigation, in contrast to a field in which the soil is very deep to lithic bedrock.

2. True or False? One land use commonly associated with human-manufactured materials is urban land.

3. True or False? High bulk density is an indicator of low soil porosity and soil compaction.

4. Permafrost is which type of soil restriction?

    a. Physical
    b. Chemical
    c. Thermal

5. Compaction from a plowpan may result in which of the following?

    a. Shallow plant rooting and poor plant growth
    b. Increased runoff and erosion from sloping land
    c. Increased runoff from waterlogged soils in flat areas
    d. All of the above

6. High amounts of aluminum in the soil due to low pH are which type of soil restriction?

    a. Physical
    b. Chemical
    c. Thermal

7. High bulk density due to the presence of a fragipan is which type of restriction?

    d. Physical
    e. Chemical
    f. Thermal