

OJT Training Module Cover Sheet

Title: 1017 Understand soil and plant relationships in your area—physical and chemical properties.

Type: Skill Knowledge

Performance Objective: Trainee will be able to ...

- Describe soil property indicators that affect soil-plant relationships.
- Explain the soil food web concept.
- Understand symbiosis and mutualism and describe management practices that support these associations.

Target Proficiency:

- Awareness 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.

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:

- 1005 Understand the water-holding capacity property of soils.
- 1010 Soil Salinity – understand the effects and management practices to apply
- 1012 Understand the importance of organic matter and soil carbon to soil quality and soil health.
- 1019 Understand the effects of limiting layers on land use—overview.
- 1204 Understand how soil structure affects other soil qualities.
- 1208 How to measure soil pH and its importance.

Notes:

None

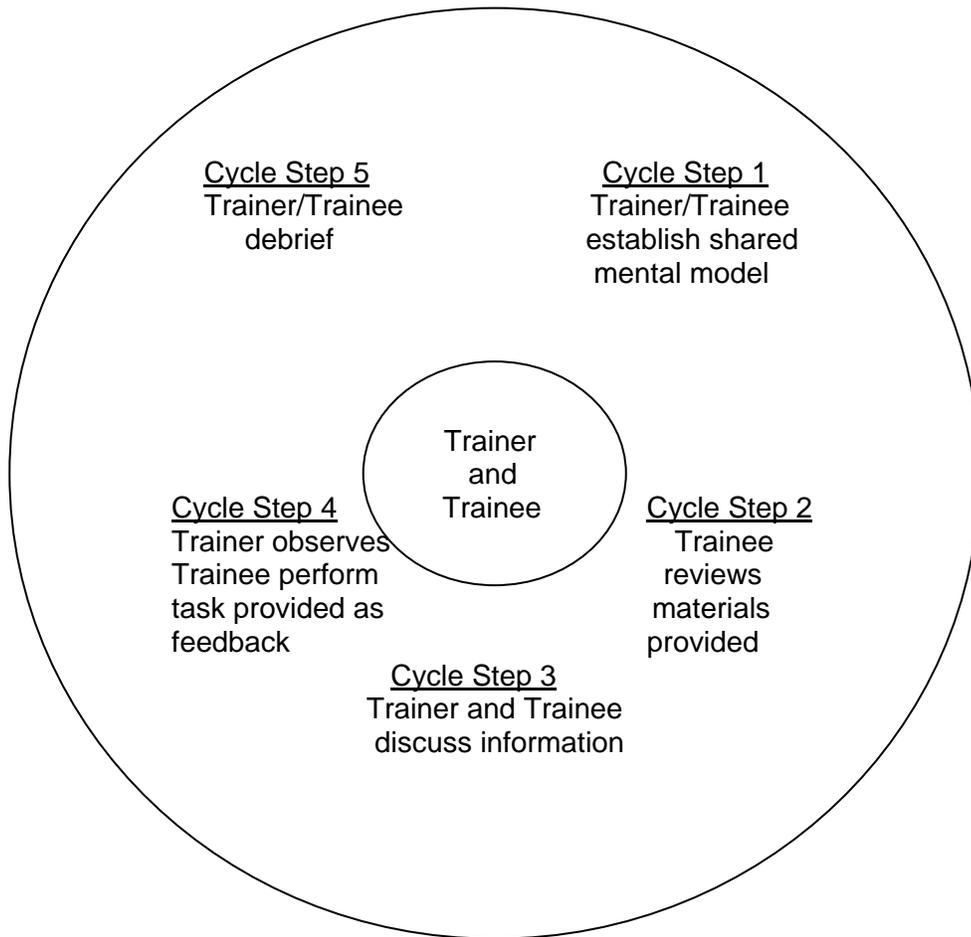
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The Five-Step OJT Cycle for Declarative Training (Knowledge)



OJT Module Lesson

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WHAT	WHY, WHEN, WHERE, HOW, SAFETY, QUALITY
Cycle step 1	Trainer and trainee review objectives of module.
Cycle step 2	<p>Trainer and trainee access via the internet and the soils web pages and read/review:</p> <ul style="list-style-type: none"> • <i>Farming in the 21st Century</i>, a practical approach to improve Soil Health. • Soil Quality Publication: <ul style="list-style-type: none"> ○ Note 8: Soil Quality Information Sheets <ul style="list-style-type: none"> ▪ Indicators for Soil Quality Evaluation
Cycle step 3	<p>Trainer discusses with trainee the reviewed documents with focus on the physical and chemical properties important to the local area. Discuss the physical and chemical indicators used to evaluate soil quality with emphasis on those relevant to your area of the country.</p> <p>Trainer provides examples of common tillage, fertilization, and pesticide practices in the area. Discuss the immediate and long-term effects of these practices on the soil, the plant, and the related food web. Discuss the concepts of symbiosis and mutualism. Discuss which common farming practices in the area support enhancement of these associations.</p> <p>Trainer should incorporate discussion of forest and range practices if applicable.</p>
Cycle step 4	Trainer asks trainee to describe the food web concept. Ask the trainee to describe why a healthy soil is dependent upon how well the soil food web is fed. Ask the trainee to list several chemical and physical soil indicators that contribute to or detract from plant growth.
Cycle step 5	Trainer and trainee can debrief the exercise and answer any questions.

OJT Module Lesson Measurement of Learning

Title: **1017 Understand soil and plant relationships in your area—physical and chemical properties.**

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? Physical indicators, such as topsoil depth, texture, and compaction, reflect limitations to root growth and seedling emergence.
2. True or False? If crop nutrients are applied to the soil in excess, plants will not have well developed associations with soil organisms that help them acquire water and nutrients.
3. True or False? Soil health is improved by disturbing the soil less, growing the greatest diversity of crops, maintaining living roots in the soil as much as possible, and keeping the soil covered with residue at all times.
4. True or False? Chemical indicators, such as pH, salinity, and cation-exchange capacity, can affect the availability of nutrients to plants.
5. What are the two primary mechanisms for carbon to get into the soil and feed the organisms in the soil food web?
 - A) Mulching crop residues on the soil surface to suppress weed growth and retain carbon dioxide in the soil.
 - B) Associations between plants and microbes where sugars and nutrients are traded in the soil.
 - C) Soil life decomposing dead plant materials and excreting carbon in their waste products.
 - D) Raindrops carrying dissolved carbon infiltrate the soil between stable soil aggregates deep into the soil profile.