



Australian Government

AHCPER336 Test, improve and maintain healthy soil in a permaculture system

Release: 1

AHCPER336 Test, improve and maintain healthy soil in a permaculture system

Modification History

Release	Comments
Release 1	This version released with AHC Agriculture, Horticulture and Conservation and Land Management Training Package Version 9.0.

Application

This unit of competency describes the skills and knowledge required to test soils, develop a soil improvement plan and maintain the health of soil in a permaculture system.

The unit applies to individuals who work under broad direction and take responsibility for their own work, including limited responsibility for the work of others. They use discretion and judgement in the selection and use of available resources, and complete routine activities.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Nil

Unit Sector

Permaculture (PER)

Elements and Performance Criteria

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Sample soil in a permaculture system	1.1 Determine site and purpose for soil tests in a permaculture system 1.2 Collect soil samples according to workplace procedures 1.3 Prepare and label soil samples according to soil testing procedures
2. Test soil for structural requirements and plant	2.1 Carry out soil tests according to testing procedures and industry standards

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
needs	2.2 Arrange and submit soils for laboratory nutrient testing according to identified purpose, workplace procedures and laboratory requirements 2.3 Collate and record test results for each sample according to workplace and testing procedures
3. Determine soil improvement requirements	3.1 Determine requirements for soil improvement from test results 3.2 Identify soil biota and develop strategy to optimise biodiversity 3.3 Investigate soil improvement options 3.4 Confirm soil improvement options with experienced stakeholders
4. Develop and implement soil improvement plan	4.1 Develop a plan and schedule for soil improvement according to site requirements, purpose and test results 4.2 Calculate rates of soil additives and supplements according to permaculture and organic principles 4.3 Apply additives and supplements according to permaculture and organic principles 4.4 Implement strategy to optimise soil biota
5. Maintain health of soil according to organic and permaculture principles	5.1 Monitor and record performance of soil improvement plan 5.2 Amend soil improvement plan for identified poor performance 5.3 Monitor and modify cultural practices with potential to cause deterioration of soil health

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential for performance in this unit of competency but are not explicit in the performance criteria.

Skill	Description
Writing	Document soil sample accurately, maintaining traceability throughout testing and recording procedures
Numeracy	Accurately perform calculations relevant to tests performed to establish baseline for soil health

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
AHCPER336 Test, improve and maintain healthy soil in a permaculture system	AHCPER319 Test, improve and maintain healthy soil in a permaculture system	Changes to Application, Elements and Performance Criteria for clarity Changes to Performance Evidence, Knowledge Evidence and Assessment Conditions for clarity Addition of Foundation Skills	Equivalent

Links

Companion Volumes, including Implementation Guides, are available at VETNet -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=c6399549-9c62-4a5e-bf1a-524b2322cf72>

Assessment Requirements for AHCPER336 Test, improve and maintain healthy soil in a permaculture system

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Performance Evidence

An individual demonstrating competency must satisfy all of the elements and performance criteria in this unit.

There must be evidence that the individual has tested soils in a permaculture system and implemented a soil improvement and maintenance plan, including:

- identified purpose and site for soil sample and collected soil samples
- tested soil samples, which must include all of the following tests:
 - texture
 - structure
 - organic matter
 - pH
 - water infiltration
 - compaction
- prepared a soil sample for laboratory testing of nutrients
- determined soil improvement requirements and strategy to improve soil biota
- implemented soil improvement plan according to permaculture and organic principles
- monitored soil improvement plan to maintain soil health.
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Knowledge Evidence

An individual must be able to demonstrate the knowledge required to perform the tasks outlined in the elements and performance criteria of this unit. This includes knowledge of:

- permaculture principles and practices related to soil health and plant nutrition:
 - working with natural soils rather than importing soil
 - soil as an ecosystem
 - soil as biomass and carbon capture and storage
- sampling and testing of soils:

- purpose for testing soils
- common soil tests and their outcomes
- seasonal and soil temperature effects on soil
- how to read and interpret soil test results
- soil testing techniques, such as:
 - jar test for soil structure
 - ribbon test and ball test for soil texture
 - infiltration or permeability test
 - pH testing
 - compaction test
 - non-wetting soil test
 - air-filled porosity test
 - worm count
 - microscopic biota in soils
- plant nutrient uptake and mineral action
- soil chemistry
- science of composting
- fungal and bacterial action and mulches appropriate to different plants
- additives to improve soils and protect soil biota and diversity, including:
 - compost and worm castings
 - biochar
 - green manures
 - organic mulch
 - manures/animal bedding materials
 - leaf mould
 - plantings – green manures, nurse plants
 - companion planting
 - chop and drop
 - nutrient trapping systems
 - greywater use
 - organically certified products
 - amendments that may include rock dust, gypsum, dolomite, lime, zircon, sulphur and other minerals
- soil life, including microscopic life
- monitoring and recording procedures for soil improvement plans, including:
 - observing changes over time
 - use of tables and charts to record data
 - importance of photographic records
 - documenting observations
- cultural practices detrimental to soil health, including:

- over-watering or under-watering
- over-grazing
- over-cultivating
- off-contour ploughing
- methods of waste disposal causing minimal impact on the environment
- the effects of conventional agricultural chemicals on soils and soil ecosystems.
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Assessment Conditions

Assessment of the skills in this unit of competency must take place under the following conditions:

- physical conditions:
 - skills must be demonstrated in a permaculture system or an environment that accurately represents workplace conditions
- resources, equipment and materials:
 - soil and soil sampling tools and equipment
 - soil testing consumables and equipment for tests specified in the performance evidence
- specifications:
 - workplace policies, procedures, processes
 - manufacturer operating instructions for sampling and testing equipment
 - access to safety data sheets for test chemicals
 - workplace instructions/job specifications/client briefs
 - access to specific standards and principles of permaculture and organic growing
- relationships:
 - stakeholders with expertise
- timeframes:
 - according to seasonal variations.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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