



Australian Government

AHCPER319 Test, improve and maintain healthy soil in a permaculture system

Release: 1

AHCPER319 Test, improve and maintain healthy soil in a permaculture system

Modification History

Release	TP Version	Comment
1	AHCv1.0	Initial release

Application

This unit of competency describes the skills and knowledge required to test, improve and maintain healthy soil in a permaculture system. It requires knowledge of soils and their components, testing methods, nutrient action and soil improvement systems.

All work is carried out to comply with workplace procedures.

This unit applies to individuals who analyse information and exercise judgement to complete a range of advanced skilled activities and demonstrate deep knowledge in a specific technical area. They have accountability for the work of others and analyse, design and communicate solutions to a range of complex problems.

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

Pre-requisite Unit

Nil.

Unit Sector

Permaculture (PER)

Elements and Performance Criteria

Element	Performance criteria
Elements describe the essential outcomes.	Performance criteria describe the performance needed to demonstrate achievement of the element.
1. Take soil samples from a number of places in the permaculture system	1.1 Obtain samples from several places over a site 1.2 Prepare the samples for testing 1.3 Label containers accurately with location identifier, date, soil test and tester

Element	Performance criteria
2. Test soil for range of plant and structural needs	2.1 Carry out soil tests for texture, organic matter, structure, pH, water infiltration and compaction 2.2 Have samples tested by a laboratory for nutrient levels and deficiencies if concerned or if particular requirements exist for the crops and livestock in the permaculture system 2.3 Re-test in a different season or soil temperature
3. Analyse soil improvement requirements	3.1 Determine requirements for soil improvement from tests carried out 3.2 Determine requirements for soil improvement from the laboratory test results, if taken 3.3 Identify soil biota in soil and ascertain how to optimise biodiversity 3.4 Research soil improvement options, including discussing with neighbours and experienced practitioners appropriate options for soil improvement
4. Implementing soil improvement plan	4.1 Develop a plan for soil improvement over time and vary it depending on the location on the site and the crop or livestock being grown 4.2 Calculate required quantities of allowable additives and supplements to improve soil health 4.3 Use products at recommended rates and according to any existing certification system applying to the land 4.4 Protect soil biota present in soil, including using appropriate mulches for perennial and annual plants
5. Maintain health of soil according to organic guidelines	5.1 Observe changes over time and record using tables and photographic records 5.2 Avoid practices that can cause deterioration in soil health such as over- or under- watering, over-grazing, over-cultivating and off-contour ploughing 5.3 Follow organic and permaculture guidelines to increase soil carbon

Foundation Skills

Foundation Skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Unit Mapping Information

New unit.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=c6399549-9c62-4a5e-bf1a-524b2322cf72>

Assessment Requirements for AHCPER319 Test, improve and maintain healthy soil in a permaculture system

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Performance Evidence

The candidate must be assessed on their ability to integrate and apply the performance requirements of this unit in a workplace setting. Performance must be demonstrated consistently over time and in a suitable range of contexts.

The candidate must provide evidence that they can:

- take soil samples
- test soils
- analyse soil improvement requirements
- implement soil improvement plan according to permaculture guidelines
- maintain soil health

Knowledge Evidence

The candidate must demonstrate 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
- principles of sustainable horticultural practices
- how to read a laboratory soil test
- 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, such as
 - compost and worm castings compost teas
 - 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
- plant growth and development
- soil life, including microscopic life
- methods of waste disposal causing minimal impact on the environment
- the effects of conventional agricultural chemicals on soils and soil ecosystems

Assessment Conditions

Assessors must satisfy current standards for RTOs. Assessors must also hold a nationally accredited Certificate III (or higher) in Permaculture. Completion of a Permaculture Design Course (PDC) is not sufficient at this level.

Links

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