



**Australian Government**

# **AHCSOL508 Manage soils to enhance sustainability**

**Release: 1**

# AHCSOL508 Manage soils to enhance sustainability

## Modification History

| Release   | Comments                                                                                                                    |
|-----------|-----------------------------------------------------------------------------------------------------------------------------|
| Release 1 | This version released with AHC Agriculture, Horticulture and Conservation and Land Management Training Package Version 6.0. |

## Application

This unit of competency describes the skills and knowledge required to identify and assess soil characteristics, develop and implement a plan to improve the health of soils, and monitor and review results.

The unit applies to individuals who apply specialist skills and knowledge to the management of soils to enhance sustainability, and take personal responsibility and exercise autonomy in undertaking complex work. They analyse and synthesise information, and analyse, design and communicate solutions to sometimes complex problems.

All work must be carried out to comply with workplace procedures, health and safety in the workplace requirements, legislative and regulatory requirements, and sustainability and biosecurity practices.

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

## Pre-requisite Unit

Nil

## Unit Sector

Soils and Media (SOL)

## 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. Identify characteristics of regional and local soils to assess their | 1.1 Identify common characteristics and limitations of regional and local soils<br>1.2 Refer to paddock assessment to establish soil characteristics |

| Elements                                                            | Performance Criteria                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|---------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>Elements describe the essential outcomes.</i>                    | <i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| current health                                                      | <p>1.3 Research soil biota and its relationship to soil fertility</p> <p>1.4 Evaluate current production practices and their contribution to land degradation and soil problems</p> <p>1.5 Identify and select land preparation methods matched to machinery and equipment to maintain and improve soil productivity and structure</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 2. Develop a plan to improve and maintain the health of soils       | <p>2.1 Identify the impact of weather and climate on operational activities, soil structure and fertility, and develop contingency plans to account for climatic or other events</p> <p>2.2 Compare and interpret soil test analysis with historical data, and incorporate into plan</p> <p>2.3 Select nutrients to meet specific plant or crop requirements</p> <p>2.4 Evaluate alternative strategies or products to improve soil fertility</p> <p>2.5 Develop a soil amendment strategy, including soil ameliorating activities and soil ameliorant products to enhance sustainability of soil health</p> <p>2.6 Select appropriate production crops suitable for soil type and climate for a land use rotation plan to improve or maintain soil productivity</p> <p>2.7 Determine soil conservation strategies to minimise soil erosion and increase soil capacity, productivity and sustainability</p> <p>2.8 Assess the environmental implications of chemical use, and consider and document alternative methods and organic preventive methods</p> <p>2.9 Develop a strategy to improve and maintain the health of soils</p> <p>2.10 Develop a strategy to monitor and report soil health and productivity</p> <p>2.11 Document the soil health and productivity plan, and communicate to stakeholders</p> |
| 3. Implement plan for improvement and maintenance of a healthy soil | <p>3.1 Implement a schedule for soil improvement, taking into account seasonal, geographical and resource factors, and stock or crop rotation</p> <p>3.2 Implement strategies to integrate methods of soil improvement operations with land use rotation</p> <p>3.3 Determine key staff responsibilities for specific implementation processes, and allocate duties</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

| Elements                                                                                       | Performance Criteria                                                                                                                                                                                                                                                                                                                          |
|------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>Elements describe the essential outcomes.</i>                                               | <i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>                                                                                                                                                                                                                                        |
|                                                                                                | 3.4 Modify plan to meet contingencies, and communicate to staff<br>3.5 Record and file soil management activities according to workplace procedures                                                                                                                                                                                           |
| 4. Review plan, implementation strategy and the outcomes and determine necessary modifications | 4.1 Analyse effectiveness of the soil improvement management plan through evaluation at key points, making adjustments where outcomes fall outside plan projections<br>4.2 Prepare recommendations for future strategies, based on the analysis of paddock observations and production data, to further enhance soil ecosystem and production |

## 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                                                                                                                                                                                                                                                                                       |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Reading            | <ul style="list-style-type: none"> <li>Identify and interpret textual information regarding common characteristics and limitations of regional and local soils, and soil biota and its relationship to soil fertility relevant to soil health and productivity management and planning</li> </ul> |
| Oral communication | <ul style="list-style-type: none"> <li>Initiate discussions with staff and stakeholders using clear language to discuss soil health and productivity plan and communicate modifications to plan</li> </ul>                                                                                        |
| Numeracy           | <ul style="list-style-type: none"> <li>Calculate nutrient requirements</li> </ul>                                                                                                                                                                                                                 |

## Unit Mapping Information

| Code and title current version                      | Code and title previous version                  | Comments                                            | Equivalence status |
|-----------------------------------------------------|--------------------------------------------------|-----------------------------------------------------|--------------------|
| AHCSOL508<br>Manage soils to enhance sustainability | AHCSOL502 Manage soils to enhance sustainability | Performance criteria clarified<br>Foundation skills | Equivalent         |

| Code and title current version | Code and title previous version | Comments                                 | Equivalence status |
|--------------------------------|---------------------------------|------------------------------------------|--------------------|
|                                |                                 | added<br>Assessment requirements updated |                    |

## 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 AHCSOL508 Manage soils to enhance sustainability

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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 managed soils to enhance sustainability on at least one occasion, and has:

- researched information on soils
- assessed soil type, texture and structure in the paddock
- diagnosed areas with soil problems or potential soil problems
- developed, implemented, monitored and evaluated a plan to achieve healthy soils through application of soil science
- diagnosed and interpreted soil sample test results, and determined priorities for improving soil health
- calculated amounts of nutrients required, and prepared a fertiliser program that reflects needs and priorities
- considered and selected alternatives, including organic products and methods for improving soil health
- recorded and filed soil management activities according to workplace procedures.

## 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:

- physical, chemical and biological properties of soils
- extent and nature of soil microorganisms
- soil biota types, role in cycling nutrients and improving soil structure
- natural cycling of nutrients, including:
  - carbon
  - nitrogen
  - phosphorous

- the role of soil biota
- factors affecting soil biota, including:
  - moisture
  - temperature
  - aeration
  - nutrient supply
  - pH
  - organic matter
- basic chemistry concepts related to interpreting soil test analysis, including:
  - symbols, elements and compounds
  - valency, anions, cations
  - reactions
  - EC (electrical conductivity)
  - CEC (Cation Exchange Capacity)
  - organic matter
  - pH and its importance in the availability of nutrients
  - role of macronutrients and micronutrients in plant nutrition
  - the concept of limiting factors for production
- basic biology, including:
  - chemical basis of plants and animals
  - basic plant structure and function
- plant nutrition, including:
  - water
  - proteins
  - sugar
  - nitrate
  - lignin content
- potential problems with the use of conventional chemical fertilisers, including:
  - acidification
  - contamination of soil and associated water contamination
  - harm to soil biota
- alternative methods to improve soil fertility, including:
  - products
  - aeration and mulching machinery
- workplace recording and filling procedures.

## Assessment Conditions

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

- physical conditions:
  - a workplace setting or an environment that accurately represents workplace conditions
- specifications:
  - workplace recording and filling procedures
- relationships:
  - staff and stakeholders
- timeframes:
  - according to job requirements.

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

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