

Modification history

Release	Comments
Release 3	This version released with AHC Agriculture, Horticulture, Conservation and Land Management Training Package Version 5.0.
Release 2	This version released with AHC Agriculture, Horticulture, Conservation and Land Management Training Package Version 2.0.
Release 1	This version released with AHC Agriculture, Horticulture, Conservation and Land Management Training Package Version 1.0.

AHCSOL502	Manage soils to enhance sustainability
Application	<p>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 result.</p> <p>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.</p> <p>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.</p> <p>No licensing, legislative, or certification requirements apply to this unit at the time of publication.</p>
Prerequisite Unit	Nil
Unit Sector	Soils and media (SOL)

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 Australian soils to assess their current health	1.1 Identify common characteristics and limitations of Australian soils 1.2 Refer to paddock assessment to establish soil characteristics 1.3 Research soil biota and its relationship to soil fertility 1.4 Evaluate current production practices and their contribution to land degradation and soil problems 1.5 Identify and select land preparation methods matched to machinery and equipment to maintain and improve soil productivity and structure

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
2. Develop a plan to improve and maintain the health of soils	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 2.2 Compare and interpret soil test analysis with historical data and incorporate into plan 2.3 Select required nutrient balance levels to improve soil fertility for effective use and uptake of plants 2.4 Evaluate alternative strategies or products to improve soil fertility 2.5 Develop a soil amendment strategy including soil ameliorating activities and soil ameliorant products to enhance sustainability of soil health 2.6 Select appropriate production crops suitable for soil type and climate for a land use rotation plan to improve or maintain soil productivity 2.7 Determine soil conservation strategies to minimise soil erosion and increase soil capacity productivity and sustainability 2.8 Assess the environmental implications of chemical use, consider and document alternative methods and organic preventive methods 2.9 Develop a strategy to improve and maintain the health of soils 2.10 Develop a strategy to monitor and report soil health and productivity 2.11 Document the soil health and productivity plan and communicate to stakeholders
3. Implement plan for improvement and maintenance of a healthy soil	3.1 Implement a schedule for soil improvement taking into account seasonal, geographical and resource factors, and stock or crop rotation 3.2 Implement strategies to integrate methods of soil improvement operations with land use rotation 3.3 Determine key staff responsibilities for specific implementation processes and allocate duties 3.4 Modify plan to meet contingencies and communicate to staff 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 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	
<i>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.</i>	
Skill	Description
Reading	<ul style="list-style-type: none"> Interpret textual information from a range of sources to identify relevant and key information on common characteristics and limitations of Australian soils and soil biota and its relationship to soil fertility relevant to soil health and productivity management and planning
Writing	<ul style="list-style-type: none"> Develop and document a soil health and productivity plan
Oral communication	<ul style="list-style-type: none"> Initiate discussions with staff and stakeholders using clear language to discuss soil health and productivity plan and communicate modifications to plan to meet contingencies
Numeracy	<ul style="list-style-type: none"> Calculate nutrient requirements

Unit Mapping Information			
Code and title current version	Code and title previous version	Comments	Equivalence status
AHCSOL502 Manage soils to enhance sustainability Release 3	AHCSOL502 Manage soils to enhance sustainability Release 2	Performance criteria clarified Foundation skills added Assessment requirements updated	Equivalent unit

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

TITLE	Assessment requirements for AHCSOL502 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
- diagnosed and interpreted soil sample test results and determine priorities for improving soil health
- considered and selected alternatives including organic products and methods for improving soil health
- calculated amounts of nutrients required and prepare a fertiliser program which reflects needs and priorities
- recorded and filed soil management activities according to workplace procedures
- developed, implemented, monitored and evaluated a plan to achieve healthy soils through application of soil science.

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
- soil biota types, role in cycling nutrients and improving soil structure
- 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
- extent and nature of soil micro organisms
- 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
- potential problems with the use of conventional chemical fertilisers, including:
 - acidification

Knowledge Evidence	
<ul style="list-style-type: none">contamination of soil and associated water contaminationharm to soil biotaalternative methods to improve soil fertility, including:<ul style="list-style-type: none">productsaeration and mulching machineryworkplace recording and filling procedures.	
Assessment Conditions	
<p>Assessment of skills must take place under the following conditions:</p> <ul style="list-style-type: none">physical conditions:<ul style="list-style-type: none">a workplace setting or an environment that accurately represents workplace conditionsspecifications:<ul style="list-style-type: none">workplace recording and filling proceduresrelationships:<ul style="list-style-type: none">staff and stakeholderstimeframes:<ul style="list-style-type: none">according to job requirements. <p>Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.</p>	
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