



Australian Government

AHCSOL502 Manage soils to enhance sustainability

Release: 2

AHCSOL502 Manage soils to enhance sustainability

Modification History

Release	Comments
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.

Application

This unit of competency standard covers the process of assessing soil characteristics, developing and implementing a plan to improve the health of soils, and monitoring and reviewing the results.

Soil chemistry, physical chemistry and biology are used in understanding the analysis of soil tests, and the importance of the role of soil biota in soil structure and plant nutrition. Strategies to combine improved production with improved soil biota are considered, and the opportunity to increase biodiversity by strategic use of unproductive land is covered.

Healthy soils are the basis of all sustainable land-based production systems. The principles of developing healthy soils involve improving soil structure, increasing soil macronutrients and micronutrients to optimum levels, balancing exchangeable cations, achieving optimum pH, eliminating toxic nutrient levels, and enhancing activity of soil biota.

All work must be carried out to comply with workplace procedures, work health and safety legislation and codes, and sustainability practices.

This unit is applicable to persons who have a role in managing a land based production business. This unit is likely to require consultation with external experts, such as pasture consultants, fertiliser representatives, contractors, extension officers from State Agricultural Departments, agronomists and producer groups.

No occupational licensing, legislative, regulatory 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

Element	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 the common characteristics of Australian soils and their limitations 1.2 Refer to a paddock assessment to establish soil characteristics 1.3 Research soil biota and its relationship to soil fertility 1.4 Evaluate current production practices in terms of their possible contribution to land degradation and soil problems 1.5 Identify and select appropriate land preparation methods matched to machinery and equipment to maintain and improve soil productivity and structure
2. Develop a plan to improve and maintain the health of soils	2.1 Identify the impact of weather and climate on operational activities on soil structure and fertility and develop contingency plans to account for climatic or other events 2.2 Interpret soil test analysis and compare with historical data in the development of a 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 plan to improve and maintain the health of soils 2.10 Develop a plan to monitor soil health and productivity 2.11 Communicate the plan and the system to monitor and record soil health to stakeholders
3. Implement plan for improvement and	3.1 Implement a schedule for soil improvement taking into account seasonal, geographical and resource factors and stock/crop rotation

Element	Performance criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
maintenance of a healthy soil	3.2 Implement strategies to integrate the most suitable methods of soil improvement operations with the proposed land use rotation plan 3.3 Determine key staff responsibilities for specific implementation processes and allocate duties 3.4 Modify plan to meet all contingencies and communicate with appropriate staff 3.5 Record soil management activities and file in the appropriate manner
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 as necessary 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.

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

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
AHCSOL502 Manage soils to enhance sustainability Release 2	AHCSOL502 Manage soils to enhance sustainability Release 1	Minor typographical errors corrected	Equivalent unit

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 AHCSOL502 Manage soils to enhance sustainability

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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:

- research information on soils
- assess soil type, texture and structure in the paddock
- diagnose areas with soil problems or potential soil problems
- diagnose and interpret soil sample test results and determine priorities for improving soil health
- consider and select alternatives including organic products and methods for improving soil health
- calculate amounts of nutrients required and prepare a fertiliser program which reflects needs and priorities
- record and store information
- develop, implement and evaluate a plan to achieve healthy soils through application of soil science
- monitor soil health from the application of soil science.

Knowledge Evidence

The candidate must demonstrate 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: 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. Concept of limiting factors for production
- basic biology: the chemical basis of plants and animals; basic plant structure and function; plant nutrition; water, proteins, sugar, nitrate, lignin content; extent and nature of soil micro organisms
- natural cycling of nutrients: carbon, nitrogen, phosphorous and the role of soil biota in the cycles.
- factors affecting soil biota: moisture, temperature, aeration, nutrient supply, pH, and organic matter
- possibility of problems with the use of conventional chemical fertilisers including acidification contamination of soil and associated water contamination and harm to soil biota
- alternative methods to improve soil fertility, including products and use of machinery for aeration and mulching.

Assessment Conditions

Competency is to be assessed in the workplace or simulated environment that accurately reflects performance in a real workplace setting.

Assessors must satisfy current standards for RTOs.

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