



Australian Government

Department of Education, Employment and Workplace Relations

AHCIRG308A Monitor soils under irrigation

Release: 1

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Modification History

Not applicable.

Unit Descriptor

This Unit covers the skills and knowledge required to monitor the impact of irrigation on the soil plant growing environment, and to provide for the needs of irrigated plants. The Unit requires the ability to assess the physical and chemical properties of irrigated soils; assess the capacity of the soil to hold plant available moisture; monitor and adjust soil moisture levels; estimate plant watering requirements; and report on irrigated plant growth issues.

Application of the Unit

This Unit applies to skilled workers in the irrigation servicing, food and fibre production and amenity horticulture industries.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

Employability Skills Information

This Unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a Unit of Competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1 Assess the physical properties of an irrigated soil	1.1 The profile of an irrigated soil is described 1.2 Soil texture and structure within the soil layers is determined 1.3 Tests for organic matter level in a soil are interpreted 1.4 Test for slaking and dispersion in an irrigated soil is undertaken 1.5 The infiltration rate for an irrigated soil is assessed 1.6 Soil moisture levels are measured 1.7 The impacts of cultivation and watering practices on the physical properties of a soil are described
2 Define soil moisture properties using industry terms	2.1 Soil moisture tension and its role in determining water availability to plants is described 2.2 The field capacity of an irrigated soil is assessed 2.3 The wilting point for a plant species in an irrigated soil is observed 2.4 Readily available water (RAW) in an irrigated soil is calculated
3 Monitor soil chemical properties	3.1 Soil test results for salinity and sodicity levels in an irrigated soil is interpreted 3.2 pH tests and the potential impact of pH on soil structure and nutrient availability is interpreted
4 Assess soil health and plant growth under irrigation	4.1 The risk of erosion in an irrigated soil is assessed 4.2 An assessment of soil biology in an irrigated soil is carried out 4.3 The growing requirements for a plant species is established
5 Implement strategies to optimise the irrigation growing environment for plants	5.1 Soil husbandry practices to reduce risks of compaction and erosion are undertaken 5.2 Watering schedule is implemented and monitored 5.3 Frequency of watering is adjusted if necessary, based on available moisture, soil properties and plant response 5.4 Soil and plant moisture status and irrigation requirement is reported to supervisor

Required Skills and Knowledge

This section describes the skills and knowledge required for this Unit.

Required skills include:

Ability to:

- conduct soil structure and texture assessment
- apply the results of soil testing to assessing soil properties
- use soil moisture monitoring equipment
- calculate moisture holding capacity of plants, including RAW
- assess the erosion potential of an irrigated soil
- assess the health of an irrigated soil
- adjust watering practices to meet plant needs
- use literacy skills to read, interpret and follow organisational policies and procedures, follow sequenced written instructions, record accurately and legible information collected and select and apply procedures for a range of tasks
- use oral communication skills/language competence to fulfil the job role as specified by the organisation, including questioning techniques, active listening, clarifying information and consulting with supervisors as required
- use numeracy skills to estimate, calculate and record routine workplace measures
- use interpersonal skills to work with and relate to people from a range of cultural, social and religious backgrounds and with a range of physical and mental abilities.

Required knowledge includes:

Knowledge of:

- soil moisture monitoring procedures
- soil moisture definitions and calculations
- interpreting salinity, sodicity and pH tests
- soil structure and texture
- critical measures for moisture availability
 - readily available water
 - wilting point
 - field capacity
- effect of dispersible soils under irrigation
- signs moisture stress & nutrient deficiency in plants
- soil biology
- types of erosion
- adverse environmental impacts of irrigated plant production.

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

Critical aspects for assessment and evidence required to demonstrate competency in this Unit

The evidence required to demonstrate competency in this Unit must be relevant to workplace operations and satisfy holistically all of the requirements of the performance criteria and required skills and knowledge and include achievement of the following:

- assess the physical and chemical properties of irrigated soils
- assess the capacity of the soil to hold plant available moisture
- monitor and adjust soil moisture levels
- estimate plant watering requirements

report on irrigated plant production issues.

Context of and specific resources for assessment

Competency requires the application of work practices under work conditions. Selection and use of resources for some worksites may differ due to the regional or enterprise circumstances.

Range Statement

The range statement relates to the Unit of Competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Irrigation systems may include:	• low volume irrigation systems such as micro-irrigation • sprinkler irrigation • moving sprinkler irrigation • surface irrigation.
Interpretation of soil tests may include:	field measurements of moisture levels, infiltration rate and organic matter levels.
Soil assessment may include:	physical tests for soil structure and texture, slaking and dispersion.
Soil moisture measuring equipment may include:	• tensiometers • gypsum blocks • watermark • capacitance probes • neutron probes.

Unit Sector(s)

Irrigation