



Australian Government

Department of Education, Employment and Workplace Relations

AHCIRG422A Manage a moving sprinkler irrigation system

Release: 1

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Modification History

Not applicable.

Unit Descriptor

This Unit covers the process of managing a moving sprinkler irrigation system and defines the standard required to: develop procedures for system operation; troubleshoot faults and blockages; measure performance of the system; and benchmark energy and water efficiency of the system.

Application of the Unit

This Unit applies to irrigation managers in the food and fibre production 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 Ensure the <i>moving sprinkler irrigation system</i> is prepared for operation	1.1 Staff are trained in carrying out pre-start checks and routine servicing 1.2 The irrigation controller is programmed and/or adjusted to meet the required schedule 1.3 Procedures are established for adjusting valves and checking filters and emitters
2 Develop and implement start-up and shutdown procedures for a moving sprinkler irrigation system	2.1 Start-up procedures for a sprinkler irrigation system are developed according to system specifications and technical manuals 2.2 Shut down sequence and isolation procedures are developed according to system specifications and technical manuals 2.3 Soil conditions for operation are specified, or tracks maintained, to reduce compaction
3 Carry out trouble shooting for faults and blockages	3.1 Access to faulty components and blockages is arranged 3.2 Faulty components are removed from the system, according to system specifications and technical manuals, and repaired or disposed of in an environmentally responsible way 3.3 Replaceable components are selected from manufacturer catalogues and procured using enterprise procedures 3.4 Replacement components are installed to meet system specifications according to technical manuals
4 Measure performance of a moving sprinkler irrigation system	4.1 Variations in pressures are identified and recorded in accordance with enterprise policy and procedures 4.2 Water flow rates are measured and recorded in accordance with enterprise policy and procedures 4.3 Variations in water flow and distribution are identified and recorded in accordance with enterprise policy and procedures 4.4 Pump performance parameters are measured as necessary and recorded in accordance with enterprise policy and procedures 4.5 Variations in pump performance parameters are measured where relevant and recorded in accordance with enterprise policy and procedures 4.6 Distribution and delivery systems are inspected and malfunctions in system are identified, fixed and actions recorded in accordance with enterprise policy and procedures 4.7 Factors external to the system that may cause interference are identified and recorded in accordance with enterprise policy and procedures
5 Review system	5.1 System pressures and variations are recorded in accordance with enterprise policy and procedures

- performance status
- 5.2 System flow rates and variations are recorded in accordance with enterprise policy and procedures
 - 5.3 Distribution uniformity and mean application rates are calculated and recorded in accordance with enterprise policy and procedures
 - 5.4 Watering depth is determined and recorded in accordance with enterprise policy and procedures
 - 5.5 Calculations are made for energy use and water efficiency and compared to industry benchmarks

Required Skills and Knowledge

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

Required skills include:

Ability to:

- measure output and efficiency of an irrigation system
- develop and supervise procedures for starting up, carrying out operational checks and shutting down
- monitor system effectiveness:
 - application rates
 - irrigation times
 - sprinkler coverage and output
 - soil moisture levels
 - pressure variations and blockages
 - salinity levels and water quality
 - depth of irrigation
 - infiltration and runoff
- measure, interpret and adjust flow rates and pressures
- fix blockages and replace components
- use records to review an irrigation system.

Required knowledge includes:

Knowledge of:

- moving sprinkler irrigation technologies
- component specifications
- pump types used in moving sprinkler irrigation systems and their output and efficiency ratings
- servicing and maintenance of travelling mechanism
- environmental hazards of runoff and compaction
- general irrigation methods for moving sprinkler systems
- main components of moving sprinkler irrigation systems
- pump types used in moving sprinkler irrigation systems and their operation
- energy efficiency indicators/ benchmarks for moving sprinkler irrigation:
 - Application Efficiency
 - Average Application Rate
 - Instantaneous Application Rate
- soil moisture testing techniques
- soil/plant/water relationships
- water requirements of plants/crops consistent with sound environmental management
- critical measures for moisture availability:

- readily available water
- wilting point
- field capacity
- monitoring soil compaction and drainage
- physical soil characteristics such as infiltration rate, water holding capacity and wetted volume in the root zone
- irrigation schedules
- environmental impacts of irrigation using water from any ground or underground source
- best practices for reducing environmental impacts of irrigation
- water requirements of plants/crops consistent with sound environmental management.

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: • read and follow operations manual and irrigation schedules • carry out pre-start checks • operate and inspect the system • measure and interpret flow rates and pressures • identify environmental hazards • shut down in response to irrigation indicators.
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.

<i>Moving sprinkler irrigation systems</i> may include:	moving sprinkler irrigation systems describe specifically hard and soft reel self-travelling irrigators, lateral move systems and centre pivots.
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Unit Sector(s)

Irrigation