



Australian Government

Department of Education, Employment and Workplace Relations

AHCSDT408A Perform an electrophoresis test on a seed sample

Release 1

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Modification History

Release	TP Version	Comments
1	AHC10v4	Initial release

Unit Descriptor

This Unit covers testing seed by separating proteins of varying size and/or electric charge to get a banding pattern that can be used to identify or verify a particular variety.

Application of the Unit

This Unit applies to senior seed analysts working within enterprise guidelines. In general, they oversee the preparation of samples for testing; conduct and supervise specified tests in accordance with enterprise requirements; interpret and report results; maintain record-keeping systems; and have responsibility for overall laboratory operations, the supervision of staff, and implementation of quality assurance procedures.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Nil.

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

- | | |
|---|---|
| 1. Prepare seed extraction and gel | 1.1 Working sample is prepared from submitted sample.
1.2 Seed to be tested is identified and records completed.
1.3 Single seeds are cut or crushed and transferred to centrifuge tubes.
1.4 Extraction solution is added and mixed with crushed seeds and allowed to stand for prescribed period.
1.5 Tubes are centrifuged and supernatants are collected and stored.
1.6 Gel mixture is prepared and chemicals and used to achieve required level of polymerisation. |
| 2. Carry out electrophoresis | 2.1 Buffer solution is placed in tanks.
2.2 Samples are loaded into wells and gel is placed in tanks.
2.3 Electrophoresis is carried out at the prescribed voltage and duration.
2.4 Temperature is maintained as required throughout the process |
| 3. Fix and stain sample | 3.1 Gel is removed from tank and treated with chemicals as prescribed.
3.2 Gel is washed and treated to enhance stain.
3.3 Stain is examined and/or photographed. |
| 4. Evaluate stain | 4.1 Banding pattern is compared with that of authentic variety or that of a known control sample.
4.2 Records and reports are provided in accordance with enterprise procedures.
4.3 Determine if obvious procedure or equipment problems have led to atypical data or results.. |
| 5. Maintain a safe work environment | 5.1 Established safe work practices and personal protective equipment are used to ensure personal safety and that of other laboratory personnel.
5.2 The generation of wastes and environmental impacts are minimised.
5.3 The safe collection of laboratory and hazardous waste for subsequent disposal is ensured.
5.4 Equipment and reagents are cared for and stored as required |
| 6. Maintain laboratory records | 6.1 Approved data is entered into laboratory information management system.
6.2 Confidentiality and security of enterprise information and laboratory data is maintained. |

Required Skills and Knowledge

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

Required skills include:

Ability to:

- analyse and report results
- evaluation stain banding
- fix and stain seed samples
- maintain security, integrity, traceability of samples, sub-samples, test data, results and documentation
- prepare seed extraction and gel
- record and communicate results in accordance with enterprise procedures
- select test methods and procedures
- use a centrifuge.

Required knowledge includes:

Knowledge of:

- seed biology
- the role of the International Seed Testing Association (ISTA) and the ISTA Rules for Seed Testing
- principles of electrophoresis
- range of electrophoresis testing procedures
- materials and apparatus used in electrophoresis testing
- enterprise standard operating procedures (SOPs)
- relevant health, safety and environment requirements
- using stain patterns and "fingerprints" to determine seed variety.

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: • extract seed and prepare gel • centrifuging seed and gel mixes • interpreting stain bands and patterns.
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.
Method of assessment	This Unit should be assessed together with core Units and other Units of Competency relevant to the function or work role.
Guidance information for assessment	To ensure consistency of performance, competency should be demonstrated on more than one occasion over a period of time in order to cover a variety of circumstances, cases and responsibilities, and where possible, over a number of assessment activities.

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.	
Seed may include:	bare seed; treated seed; and coated seed that has been prepared as required.

Unit Sector(s)

Seed Testing