



Australian Government

Department of Education, Employment and Workplace Relations

AHCSDT409A Perform a tetrazolium seed viability test

Release 1

AHCSDT409A Perform a tetrazolium seed viability test

Modification History

Release	TP Version	Comments
1	AHC10v4	Initial release

Unit Descriptor

This Unit covers the process of staining seeds with a tetrazolium solution to assess seed viability or germination potential.

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 replicates for testing | 1.1 Pure Seed is mixed thoroughly to reduce bias in results.
1.2 Prescribed number of replicates are drawn from the Pure Seed fraction according to enterprise guidelines.
1.3 Safe work practices and personal protective equipment are used to ensure personal safety and that of other laboratory personnel. |
| 2. Pre-moisten replicates | 2.1 Seed is pre-moistened to reduce possibility of injury to seeds when puncturing or cutting and to enable penetration of the tetrazolium solution under prescribed temperature and light conditions.
2.2 Sticky mucilage is removed from seeds as necessary.
2.3 Seed tissue is exposed prior to staining according to enterprise guidelines.
2.4 Seeds are kept moist prior to testing. |
| 3. Stain with tetrazolium solution | 3.1 Seeds are completely immersed in tetrazolium solution according to enterprise guidelines.
3.2 Fungicides and/or antibiotics may be added to solution according to enterprise guidelines.
3.3 Low light levels are maintained as required by testing procedures to facilitate staining.
3.4 At completion of staining period, the solution is decanted and seeds are rinsed with water. |
| 4. Evaluate test results | 4.1 Each seed is examined and evaluated as viable or non-viable based on staining patterns applicable to the species being tested.
4.2 The number of seeds considered viable in each replicate is counted.
4.3 The percentage of viable seed in each replicate is calculated and average percentage of viable seed across all replicates is determined. |
| 5. Finalise reporting and clean up | 5.1 Results of test are recorded and reported according to enterprise guidelines.
5.2 Laboratory and hazardous waste are safely handled, collected and disposed of according to enterprise guidelines.
5.3 Apparatus and equipment used in tetrazolium test is cleaned and used chemicals and solutions are disposed of safely in accordance with enterprise guidelines. |

Required Skills and Knowledge

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

Required skills include:

Ability to:

- calculate percentages and averages, rounding
- evaluate and report results
- expose seed tissue using recommended methods for particular seed types
- follow enterprise guidelines and standard operating procedures
- pre-moisten seed using a range of techniques
- prepare replicates for testing.

Required knowledge includes:

Knowledge of:

- the role of the International Seed Testing Association (ISTA) and the ISTA Rules for Seed Testing
- seed biology
- tetrazolium testing procedures
- concepts of metrology
- enterprise and/or legal traceability requirements
- interpretation and recording of test result, including simple calculations
- enterprise standard operating procedures (SOPs)
- relevant health, safety and environment requirements.

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: • preparation of replicates for testing • staining with tetrazolium • evaluation and reporting of test results.
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.

<i>Seed</i> may include:	• bare seed; treated seed; and coated seed that has been prepared as required.
<i>Replicate sample</i> may include:	• pure seed fraction of a purity test, or a representative fraction of the submitted sample.
<i>Pre-moistening method</i> may include:	• slow moistening through imbibing between moist paper, or soaking in water.
<i>Exposure of tissue</i> may include:	• piercing the seed; longitudinal cutting; transverse cutting, transverse incision; excision of embryo, or removal of seed coat.

Unit Sector(s)

Seed Testing