



Australian Government

Department of Education, Employment and Workplace Relations

AHCSDT407A Perform an endophytic seed test

Release 1

AHCSDT407A Perform an endophytic seed test

Modification History

Release	TP Version	Comments
1	AHC10v4	Initial release

Unit Descriptor

This Unit covers the determination of the presence of fungal endophyte in certain grasses.

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 for endophyte testing
 - 1.1 Test request is reviewed to identify samples to be tested and required test methods and equipment.
 - 1.2 Equipment and working space are cleaned and prepared for use.
 - 1.3 Endophyte staining solution is prepared.
 - 1.4 Working sample of seed is prepared from Pure Seed.
2. Test seed for endophyte presence
 - 2.1 Seed is softened in sodium hydroxide for recommended time period.
 - 2.2 Seed is rinsed thoroughly in running tap water.
 - 2.3 Seed is de-glumed, placed on a microscope slide in a drop of endophyte staining solution and slightly crushed.
 - 2.4 Cover glass is placed on seed and gentle pressure is applied.
 - 2.5 Seed is examined with compound microscope and scored as positive if endophytic hyphae are present.
3. Test seedlings for endophyte presence
 - 3.1 Seeds from working sample are selected at random and germinated.
 - 3.2 Seedlings from the sample germinated are examined after growing for a minimum of 48 days.
 - 3.3 Outermost sheath is removed from the seedling such that tissue to be examined should have no obvious discoloration from saprophytes and should have as little chlorophyll as possible.
 - 3.4 A longitudinal section of leaf sheath approximately 3–5 mm in width is isolated.
 - 3.5 Section is placed on a microscope slide with the epidermis side down.
 - 3.6 Section is stained immediately with the endophyte staining solution for prescribed time period.
 - 3.7 Excess dye is blotted off with tissue paper and a coverglass is place over section and flooded with water.
 - 3.8 Section is examined with compound microscope and scored as positive if endophytic hyphae are present.
4. Record and report test results
 - 4.1 Results are entered under Other Determinations.
 - 4.2 The scientific name of the pathogen which has been tested for and the test method used is recorded in the test results.
 - 4.3 Sample size used for testing is recorded.
 - 4.4 In the case of a negative result where the pathogen was not detected, the results is reported in terms of the ***tolerance standard***.
 - 4.5 In the case of a positive result the report should indicate percentage of infected seed.

Required Skills and Knowledge

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

Required skills include:

Ability to:

- prepare endophyte stains
- inspect seed using a compound microscope
- detect endophyte presence in seeds and seedlings
- record and report test results.

Required knowledge includes:

Knowledge of:

- seed biology
- identification of endophytes
- recording and reporting protocols
- 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	Evidence of the ability to: • prepare endophyte stains • test seed for endophyte presence • test seedlings for endophyte presence • record and report results of tests.
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.	
The <i>tolerance standard</i> may include:	an infection level less than 1% with 95% probability and depends on the total number of seeds tested, n, and is approximately $3/n$ ($P=0.95$) (see Roberts et al., 1993).

Unit Sector(s)

Seed Testing