FAMILY: POACEAE Group 4

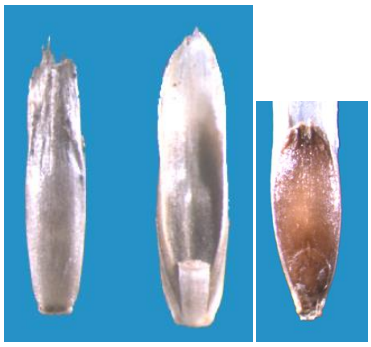
Genera: *Festuca, Lolium*

1. PRECONDITIONING:

METHOD	TIME (h)	TEMP (°C)
Imbibe on moist media	overnight	20-25

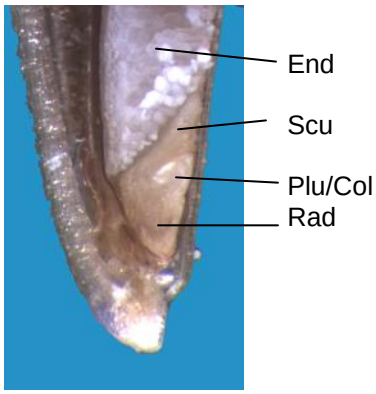
Morphology

lemma palea caryopsis
Festuca



lemma palea caryopsis
Lolium

Fig 1 External



Festuca

Fig 2 Embryo

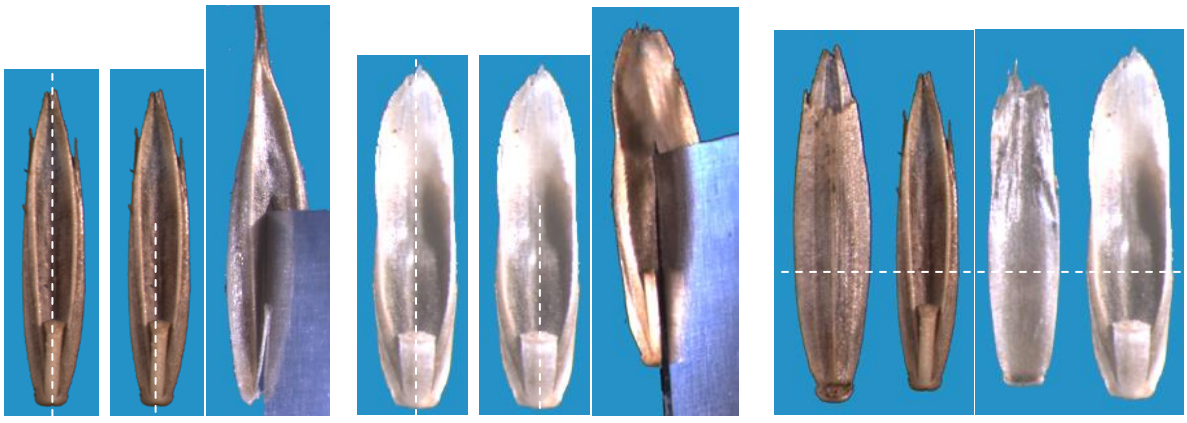
Note: Embryo faces the lemma.

2. PREPARATION AND STAINING:

METHODS	TZ Conc (%)	TIME (h)	TEMP (°C)
1. Bisect longitudinally, retaining half for staining or leave seed intact at distal end.	0.1 0.5	overnight 4-8	20-25 30-35
2. Cut laterally, slightly above embryo	1.0	4-12	20-35

Note: For some *Festuca*, if the seed unit is a multiple, test both caryopses and count the unit as viable if at least one caryopsis is viable.

1 2



bisected intact at distal end bisected intact at distal end

Fig 3 Preparation method

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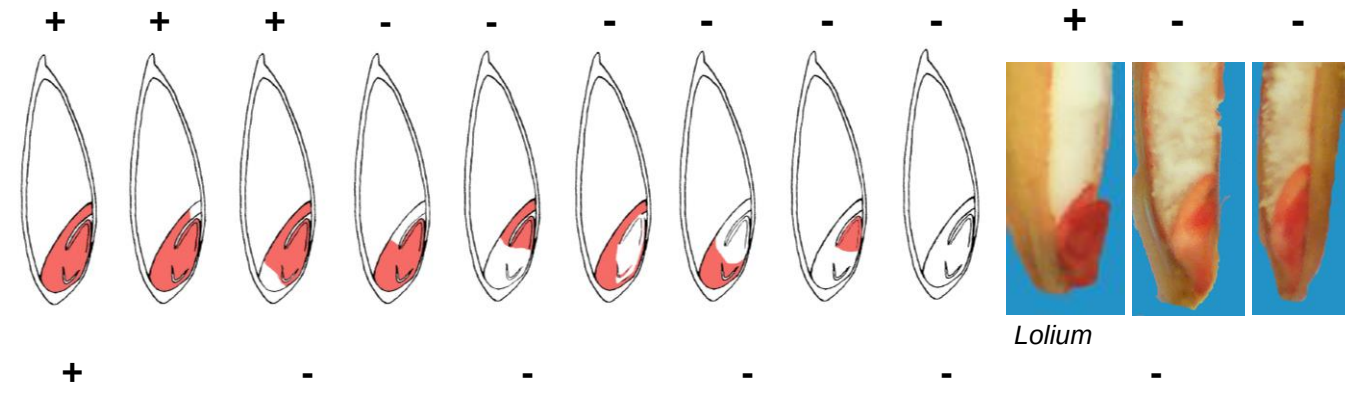
Post-staining notes: For longitudinally cut seeds with both halves attached, bisect or spread halves apart to view embryo. For laterally cut seeds, clear with 85% lactic acid for 1-2 hours at 30-35°C or remove caryopsis from floret.

3. EVALUATION:

VIABLE (NORMAL STAINING)
- entire embryo evenly stained
- unstained outer edge of scutellar region acceptable (see 2nd and 3rd drawings below)

NON-VIABLE (ABNORMAL OR NO STAINING)
- any essential part of embryo unstained
- mottled or broken embryonic tissue

Notes: The aleurone (a layer of cells just underneath the pericarp) may or may not stain and has no bearing on evaluation.



Lolium

Festuca

Notes: 1. embryo entirely stained, 2. embryo poorly developed, 3. and 4. embryonic axis and lower part of scutellum unstained, 5. embryo poorly developed and mostly unstained, 6. embryo completely unstained.

Fig 4 Seed stain evaluation

Drawings: Adapted from drawings of Janet Raspet, in Miss. State University Technical Bulletin 51, 1962.
Photos: Morphology and Prep. photos: Annette Miller, USDA/ARS NCGRP
Evaluation photos and notes: R. P. Moore, Tetrazolium Testing Handbook, AOSA, 1970.
Lolium evaluation photos: Brent Turnipseed, SDSU, Brookings, SD.