

FAMILY: POACEAE Group 1Genera: *Avena*, *Hordeum*, *Oryza*, *Secale*, *Triticale*, *Triticum***1. PRECONDITIONING:**

METHOD	TIME (h)	TEMP (°C)
Imbibe on or between moist media	16-48	5-10

Morphology*Triticum*

Fig 1 External

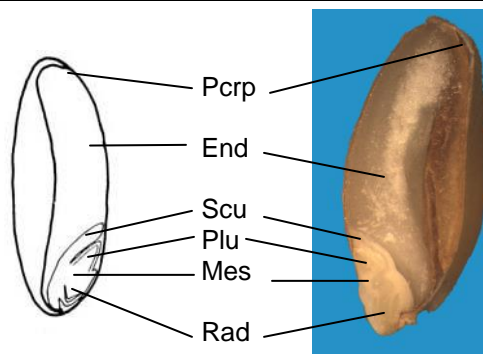
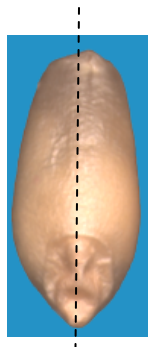


Fig 2 Embryo

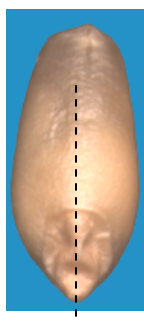
Notes: Endosperm imbibition is slower than radicle/plumule imbibition. Some *Oryza* endosperm may take up to 48 hours to completely soften. If the scutellum, plumule, radicle, and most of the endosperm is softened, seeds may be bisected before complete endosperm imbibition since endosperm tissue is nonliving and will not affect evaluation.

**2. PREPARATION AND STAINING:**

METHOD	TZ Conc (%)	TIME (h)	TEMP (°C)
Bisect longitudinally and retain half for staining, or cut longitudinally leaving seed intact at distal end or leaving enough endosperm or pericarp intact to keep both halves together	0.1	1-3	25-35



bisected



distal end intact



Fig 3 Preparation method

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Post-staining notes: For seeds with both halves attached, bisect or spread halves apart to view embryo.

 **3. EVALUATION:**

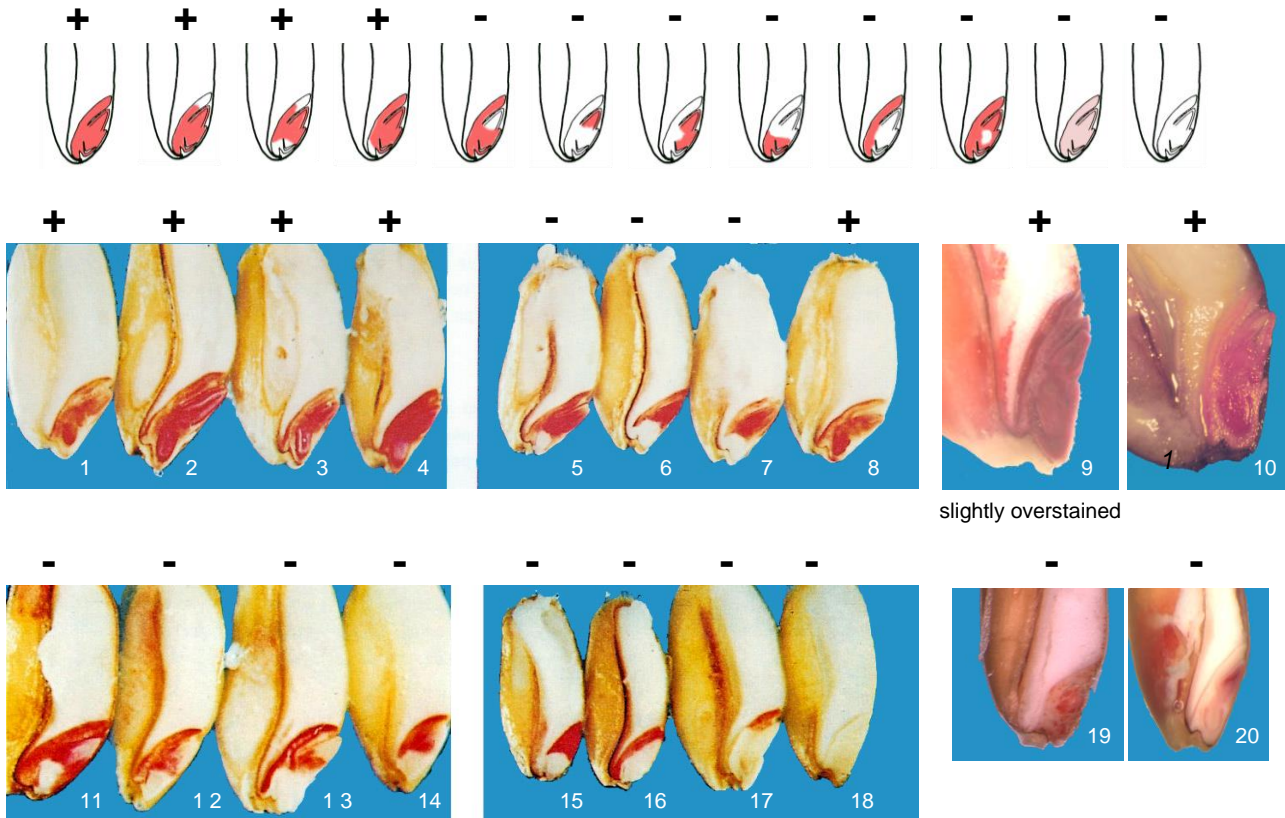
VIABLE (NORMAL STAINING)

- at least ¼ of radicle stained near mesocotyl
- embryo axis completely stained
- plumule and coleoptile completely stained
- endosperm is non-living and will not stain
- no more than ⅓ of scutellum unstained at either end
- a thin, white-colored, superficial layer over scutellum (see sections 14.2 and 15.1.3)
- mechanical damage not affecting essential parts of embryo
- point of attachment of embryo axis to scutellum stained

NON-VIABLE (ABNORMAL OR NO STAINING)

- more than ¾ of radicle unstained (begin measurement from tip and move towards mesocotyl)
- embryo axis less than completely stained
- plumule and coleoptile less than completely stained
- more than ⅓ of scutellum unstained at either end
- mechanical damage affecting essential parts of embryo
- point of attachment of embryo axis to scutellum unstained

Notes: Weak/damaged tissue will stain dark red and frost-damaged tissue will stain light in comparison to normal staining pattern. The aleurone (a layer of cells just underneath the pericarp) may or may not stain and has no bearing on evaluation.



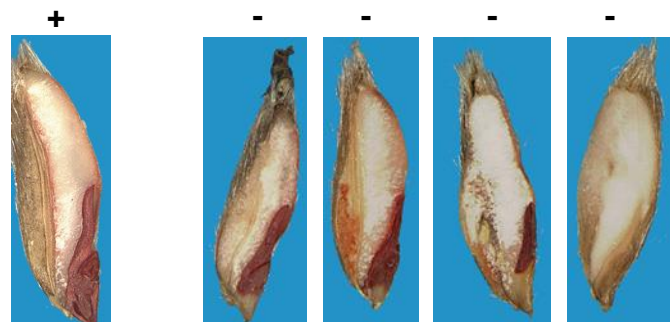
Triticum

Fig 4 Seed stain evaluation

See following page for additional evaluation photos.

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Seed stain evaluation, continued:



Avena



Oryza