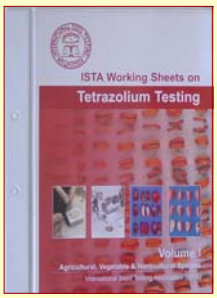
Verband Deutscher Landwirtschaftlicher Untersuchungs- und Forschungsanstalten

The Topographical Tetrazolium Test

"The introduction of the Tetrazolium test into the „world" of seed technology was among the most significant advance in seed testing technology of this century", ***D.F. Grabe, 1970***

Development of the Test Method

1942 Prof.Dr. Georg Lakon, Hohenheim, established the Topographical Tetrazolium Test
1950 Foundation of the ISTA Tetrazolium Committee
1966 Publication of the "Biochemical test for Viability" in the ISTA Rules
1985 ISTA Handbook on Tetrazolium testing by R.P. Moore
1997 First International Tetrazolium Workshop in Edinburgh
2003 ISTA Working Sheets on Tetrazolium Testing elaborated by the LTZ Augustenberg
2010 More than 15 ISTA Workshops on Tetrazolium have taken place



The Topographical Tetrazolium Test allows a rapid assessment of seed viability

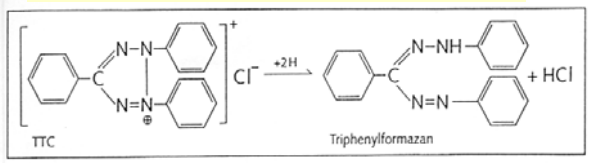
- when seeds have to be sown shortly after harvest
- in seeds with deep dormancy or showing slow germination
- for the evaluation of fresh, ungerminated seeds at the end of a germination test
- to detect the presence of sprouting and various types of damage
- to solve problems in a germination test
- in cases where a very quick estimate of germination potential is required

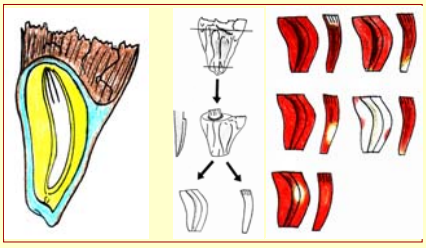
Principle

In viable tissue the colourless and soluble Triphenyltetrazolium Salt is reduced by the dehydrogenase activity of the cells into the red coloured and insoluble Triphenylformazan, that remains at the location of nascency.

Then viable seed tissue appears coloured in clear red, non viable tissue does not react with the salt and remains colourless.

Reaction of 2,3,5- triphenyltetrazolium chloride to triphenylformazan

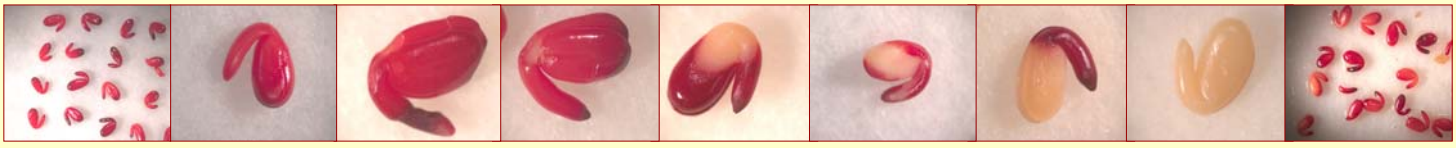




Procedure

- Pretreatment by cutting, piercing and soaking the seeds
- Preparation before staining, to enable diffusion processes
- Staining of viable tissue in Tetrazolium solution
- Preparation for evaluation
- Evaluation according ISTA

The application of the Tetrazolium Test has long tradition at the LTZ Augustenberg, since 1946 this test is in routine application. Nowadays there are working instructions for more than 350 genus/species in use, while permanently procedures for further species are developed under the leadership of Ms. Stefanie Krämer, the actual ISTA Tetrazolium Chairperson.



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