

ISSS/ ISTA Webinar on Seed Development and Viability

Dr. Duarte Figueiredo and Dr. Jose B. França Neto have answered all the questions that were sent in during the session in detail below.

I want to work on genome wide, kindly suggest me a gene family that play a role in apomixis

DF: *This is mostly unknown. The only obvious gene that comes to mind is BABYBOOM.*

Some plants reproduce sexual and others as asexual, so is there a plant that reproduce both? If yes, could you give me an example. Also, if potatoes, onion, tomatoes reproduce asexually but when it reach mature it produces flowers, is that flowers can produces seeds like other plants?

DF: *Many plants can reproduce via sexual and asexual means. If you mean by asexual and sexual seeds, one example is dandelion. But most apomictic species comprise both sexual and clonal populations.*

If Auxin is important for endosperm development, how is seed endosperm size determined?

DF: *It is determined by the proliferation rate of the endosperm, timing of endosperm cellularization, and seed coat expansion.*

I am interested in Forest seed testing through the test, from where I will get the results or publications?

JBFN: *Please, contact Dr. Sergio Pasquini, Coordinator of the Tetrazolium Technical Committee of ISTA: sergiopasquini68@gmail.com*

Could you kindly share the PPT also on TTZ test?

JBFN: *ISTA and ISSS can share my presentation with you.*

I would like to know if a seed can germinate after being treated with TZ?

JBFN: *After stained with the tetrazolium solution, if the seed is placed for germinating, if the seed is viable and also depending on the concentration of the tetrazolium solution, the seed might germinate. I based this response, on my experience with soybean seeds, stained at low concentrations of tetrazolium (from 0.075 to 0.1%). Usually, they might be observed some stiolating on the seedling.*

How can TZ test imply both viability and vigour of seeds?

JBFN: *Special procedures are followed for determining both viability and vigour of the seeds. Several publications cover this matter. Please, refer to my presentation, that will be available from ISTA and ISSS.*

Can I get the PDF handbook as PDF?

JBFN: *I am sorry, but the handbook on the Tetrazolium test edited by Abrates is available only in the printed version (and in Portuguese). However, you can download the handbook on the tetrazolium testing on soybean seeds (in Portuguese), from this link: <https://www.embrapa.br/soja/busca-de-publicacoes/-/publicacao/1098452/metodologia-do-teste-de-tetrazolio-em-sementes-de-soja>*

What is the range for estimate high and low vigor seeds?

JBFN: *Particularly for soybean seeds, there is a vigour classification that was proposed by our research group of Embrapa Soybean: very high vigour level: equal to or higher than 90%; high vigour: from 85 to 89%; medium vigour: from 75 to 84%; low vigour: equal to or below 74%.*

If we found low vigor lot, but germination is good, then how to improve vigor of the lot?

JBFN: *I am sorry, but I do not have the answer for your question.*

Is there any pre-conditioning need before TZ for soybean?

JBFN: *Yes: if the seed moisture content is low (below 12%), the seed MC has to be raised by placing the seeds in a high relative humidity environment (100% RH, 20-25 C) for 16 to 24 h. You may use the gerbox with screens used in the accelerated ageing test for this purpose.*

What area of the test can you recommend for a master's project on?

JBFN: *You can use the tetrazolium test for any seed species you are interested.*

Can you please provide more explanation on what weathering damage is?

JBFN: *For soybean seeds, weathering damage is caused by bad weather in preharvest: usually caused by rainfall associated with high temperatures.*

Does fungal infection affect staining in seeds?

JBFN: *Yes: specially storage fungi, such as Aspergillus and Penicillium.*

Does referee test mentioned in the presentation TZ test exist?

JBFN: *It was performed some years ago by ISTA, concerning vigour classification of soybean seeds*

What is the assessment of vigour that you compare the TZ test results to?

JBFN: *Specifically for soybean seeds, we (Embrapa Soybean) use the following classification: very high vigour level: equal to or higher than 90%; high vigour: from 85 to 89%; medium vigour: from 75 to 84%; low vigour: equal to or below 74%.*

How do you test seed vigour based on tetrazolium analysis?

JBFN: *Special procedures are followed for determining both viability and vigour of the seeds. Several publications cover this matter. Please, refer to my presentation, that will be available from ISTA and ISSS.*

Considering the gene bank accessions, which nondestructive method of testing seed viability do you suggest?

JBFN: *There are few nondestructive methods on development, such as the X-Ray analysis and also magnetic resonance. However, these methods are expensive and on developmental phase. Please contact DR. Francisco Gomes-Lunior for more information: francisco1@usp.br*