ISTA
Seed Quality Assurance

ISTA Secretariat
Richtiarkade 18, 8304 Wallisellen, Switzerland
Phone: +41 44 838 60 00 | Fax: +41 44 838 60 01
Email: ista.office@ista.ch
www.seedtest.org

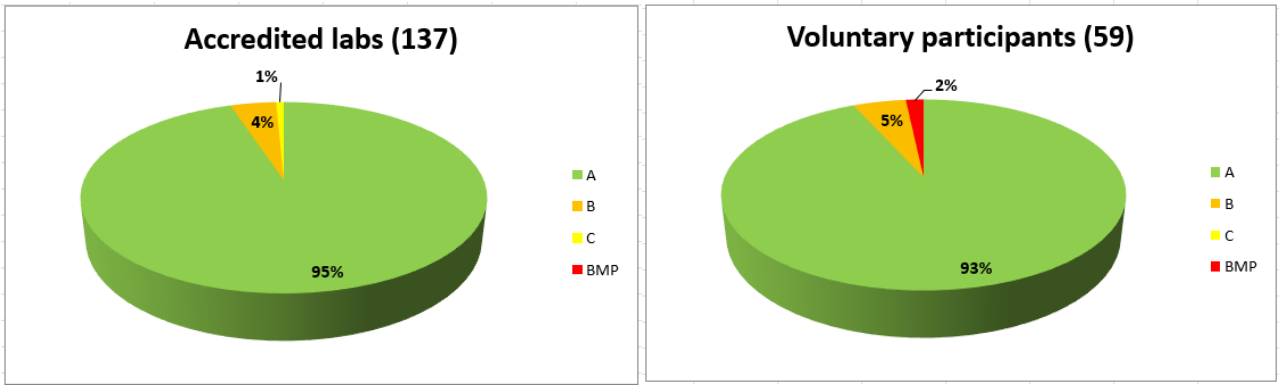
Summary report: PT 25-2 O.sat

Species: *Oryza sativa*

Scope: PUR, OSD, GER, VIA (TZ test), TSW, OIC issuance

PURITY Ratings

Total number of participants = 196



Means and Standard Deviation
of the obligatory accredited participants
calculated for the category of pure seed

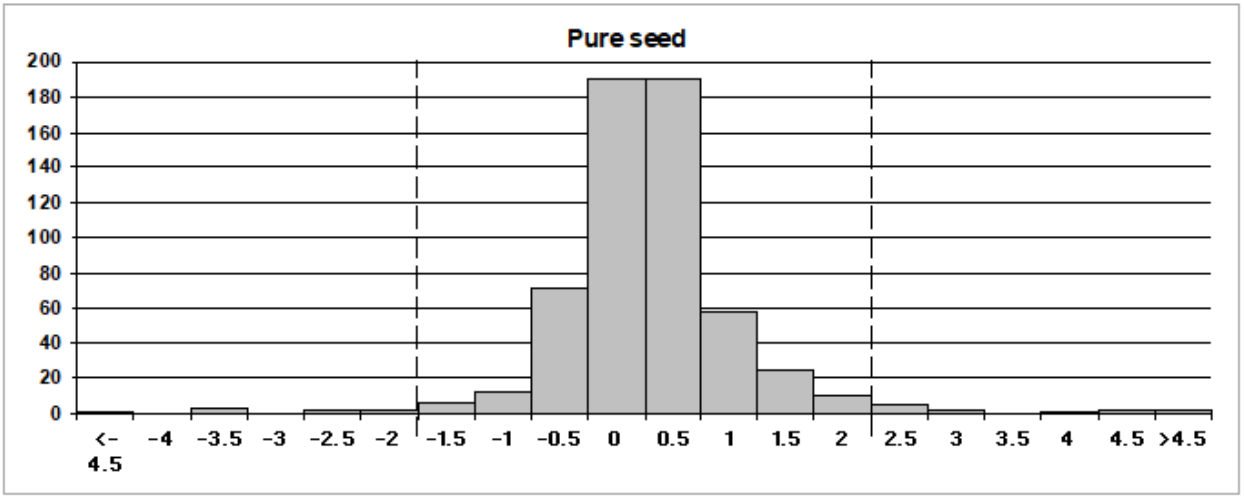
Categories	Mean Values %			Standard Deviation		
	Lot 1	Lot 2	Lot3	Lot 1	Lot 2	Lot 3
Pure seed	**98.3**	**98.3**	**98.8**	**0.26**	**0.26**	**0.21**
Other seed	0.6	0.5	0.2	-	-	-
Inert matter	1.1	1.2	1.0	-	-	-

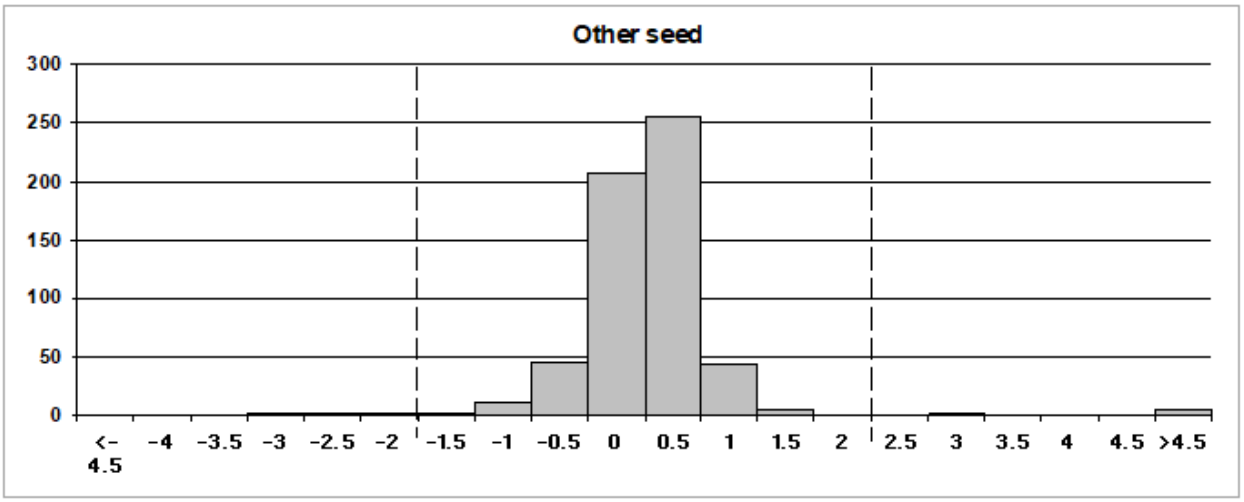
Z-score Distribution

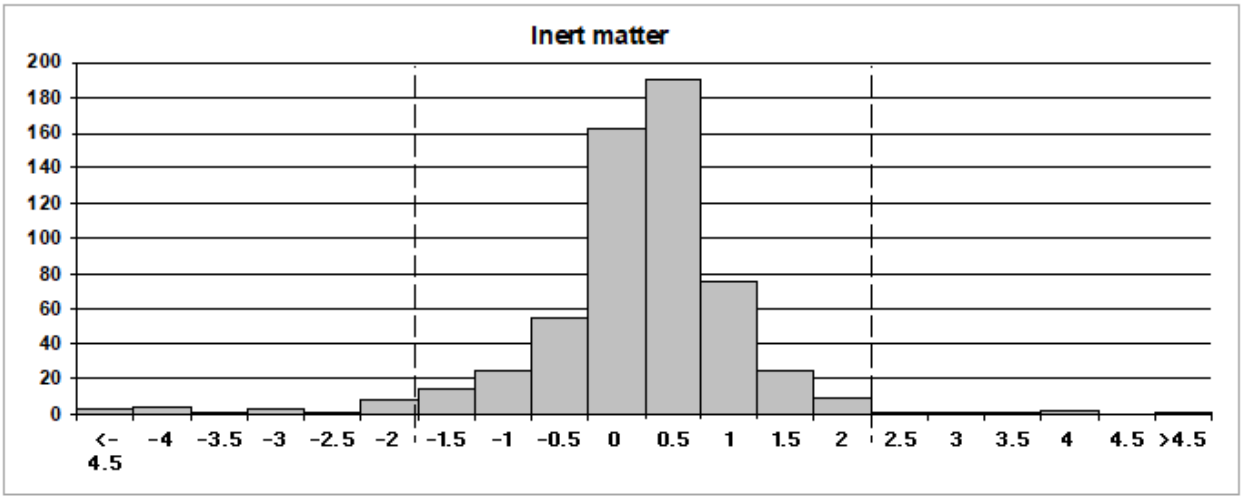
Proficiency Test Report – Test Round 25-2 O.sat

Species : Oryza sativa **Scope:** Purity

The following histograms show the frequency distributions of all participants Z-Scores for the relevant components, i.e. **Pure seed** and **Inert matter** and **Other seed**. The Z-Scores from all three samples are included in each histogram. For further explanations, please refer to the document 'The ISTA Proficiency Test Programme'

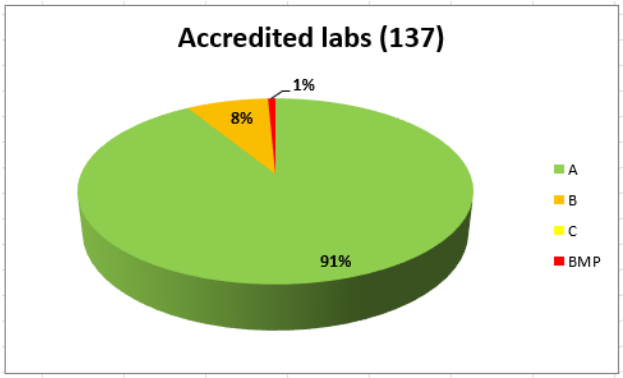


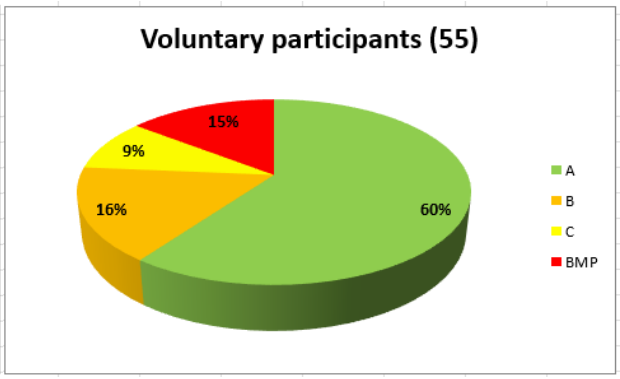




OSD Ratings

Total number of participants = 192





Retrieval rates

Proficiency Test Report - Test round 25-2 O.sat

Species: *Oryza sativa* **Scope:** Other Seed Determination

Average of seeds retrieved and identified correctly

The following table shows the retrieval rates of each species added by the test leader prior to sample dispatch. Every species that was added is assigned a value based on the actual retrieval rate of all seeds added. Thresholds are as follows:

>=90 % -> 3
>=85 % -> 2
<85 % -> 1

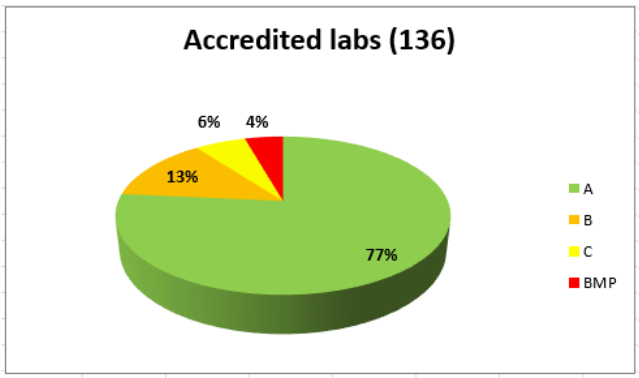
This score is multiplied with the number of seeds your laboratory reported and identified correctly. The percentage of retrieved and identified seeds is then determined and does define the in-round rating. The thresholds are as follows:

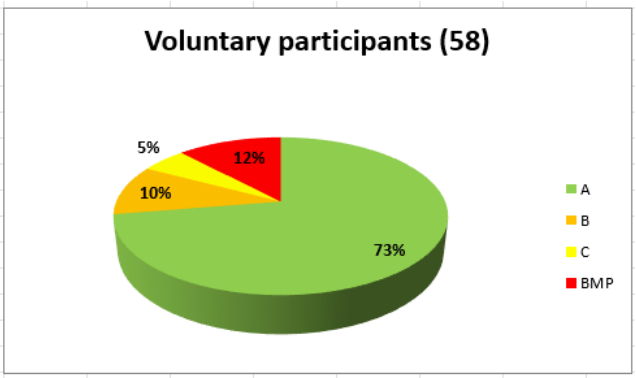
>=90 % -> A
>=80 % -> B
>=70 % -> C
<70 % -> BMP

For further details please refer to the document: "The ISTA Proficiency Test Programme".

Lot #		Species name	# of seeds added	Average # of seeds found	Retrieval rate [%]	Assigned factor
Lot 1						
	1	*Avena sativa*	2	1.8	89.3	2
	2	*Cannabis sativa*	3	2.9	97.4	3
	3	*Echinochloa spp.*	4	3.9	96.6	3
	4	*Triticum aestivum subsp.spelta*	2	1.6	78.1	1
	5	*Vicia villosa*	3	2.9	95.3	3
Lot 2						
	1	*Hordeum vulgare subsp.vulgare*	3	2.6	87.0	2
	2	*Lolium multiflorum*	4	3.7	92.4	3
	3	*Sinapis alba*	4	3.8	94.4	3
	4	*Triticum turgidum subsp.durum*	2	1.9	93.2	3
Lot 3						
	1	*Hedysarum coronarium*	3	2.5	83.0	1
	2	*Lotus corniculatus*	4	3.8	94.8	3
	3	*Triticum aestivum subsp.aestivum*	2	1.9	97.1	3
	4	*Secale cereale*	2	1.8	91.1	3

GERMINATION Ratings **Total number of participants = 194**





Means and Standard Deviation
of the obligatory accredited participants
calculated for the category of normal seedlings

Categories	Mean Values %			Standard Deviation		
	Lot 1	Lot 2	Lot3	Lot 1	Lot 2	Lot 3
Normal seedlings	**91**	**73**	**93**	**2.27**	**4.60**	**1.80**
Abnormal seedlings	4	5	3	-	-	-
Non-germinated seed	5	22	4	-	-	-

Method used
overview for all participants
presented for the temperature, substrate and pretreatment

Temperature °C	# Users		# Users TOTAL
	Accredited labs	Voluntary participants	
20⇔30	83	30	**113**
25	51	26	**77**
20 *	1	1	**2**
15⇔25 *		1	**1**
30 *		1	**1**

* these temperatures are not prescribed in the ISTA Rules

Substrate	# Users		# Users TOTAL
	Accredited labs	Voluntary participants	
BP	64	39	**103**
Sand	27	8	**35**
PP	25	3	**28**
TP	19	9	**28**

Pretreatment	# Users		# Users TOTAL
	Accredited labs	Voluntary participants	
No Treatment	78	37	**115**
Soaking / H_2O	42	15	**57**
Preheat	5	1	**6**
Prewash *	4	2	**6**
Light / no light *	4		**4**
KNO_3 *	1	1	**2**
Prechill *		1	**1**
Not reported	1	2	**3**

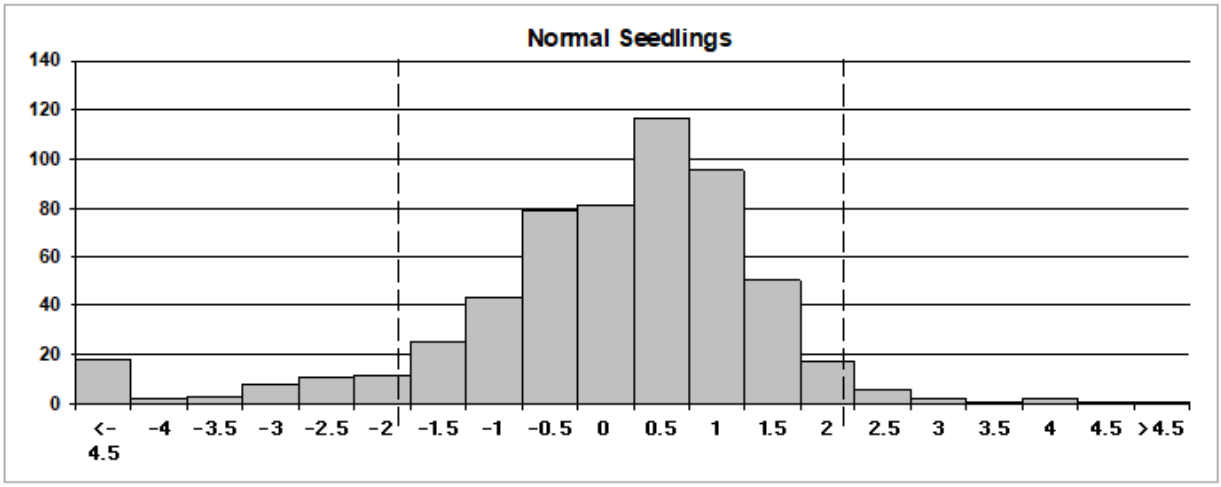
* these preparatory methods are not indicated in the Table 5A as recommended for breaking dormancy

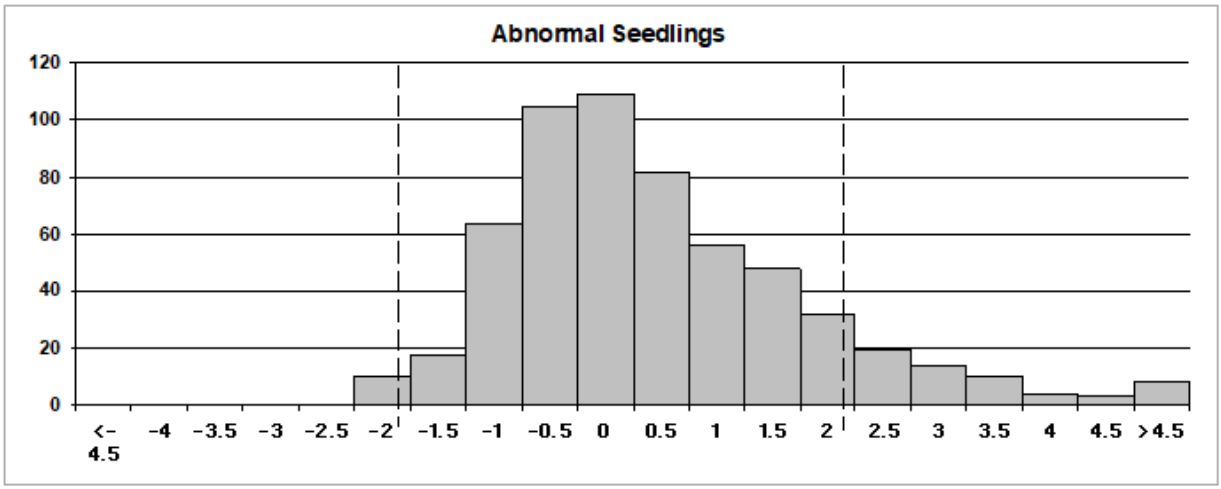
Z-score Distribution

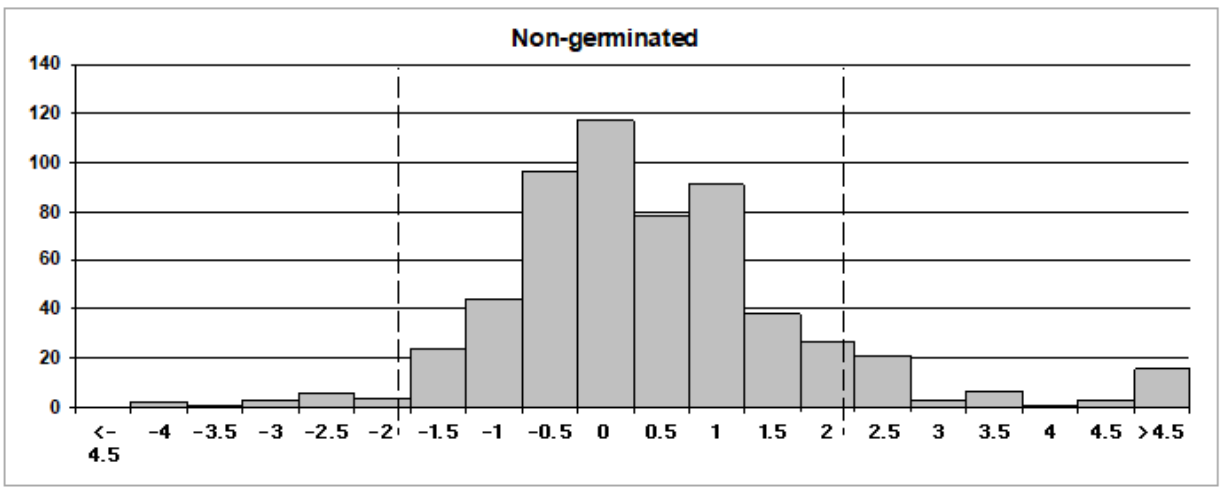
Proficiency Test Report – Test Round 25-2 O.sat

Species : Oryza sativa **Scope:** Germination

The following histograms show the frequency distributions of all participants Z-Scores for the relevant components, i.e. **Normal** and **Abnormal Seedlings** and **Non-germinated Seeds**. The Z-Scores from all three samples are included in each histogram. For further explanations, please refer to the document 'The ISTA Proficiency Test Programme'

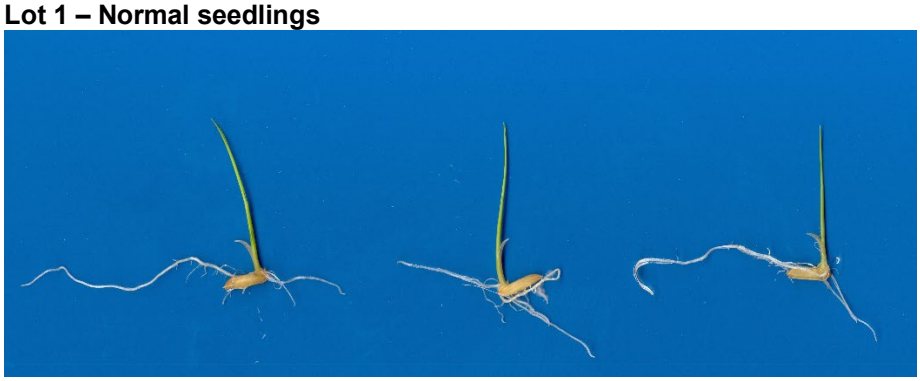






Images of normal and abnormal seedlings and of non-germinated seeds

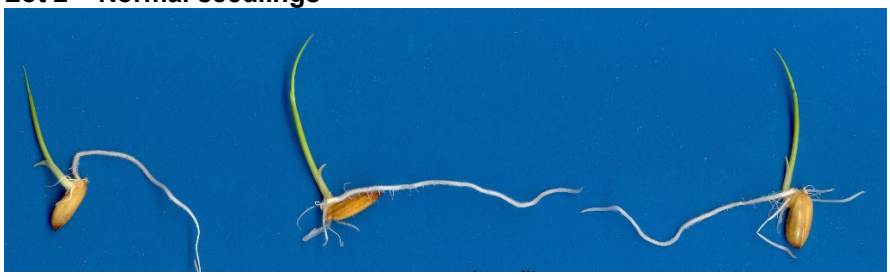
Lot 1 – Normal seedlings



Lot 1 – Abnormalities

Lot 1 – Non-germinated seeds

Lot 2 – Normal seedlings



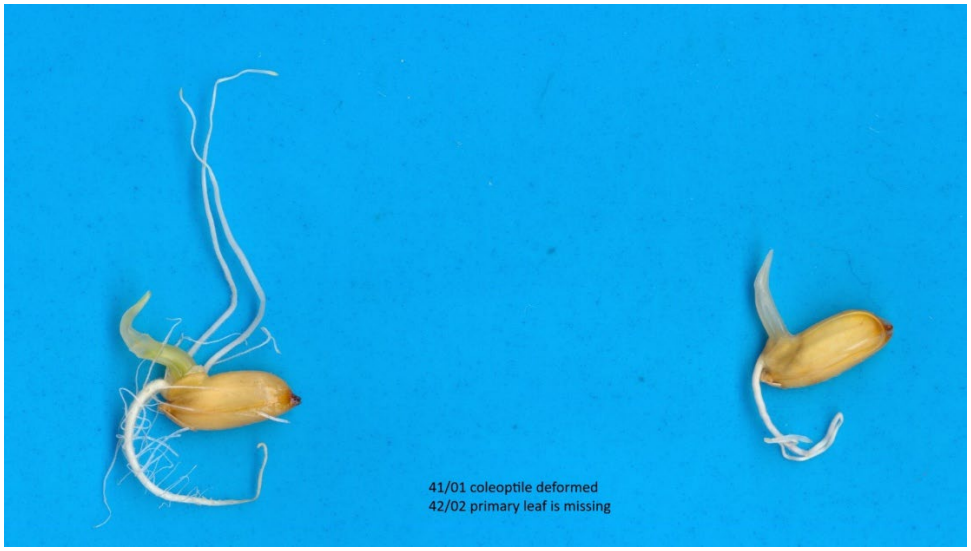
Lot 2 – Abnormalities

09 the seedling is decayed as a result of primary infection

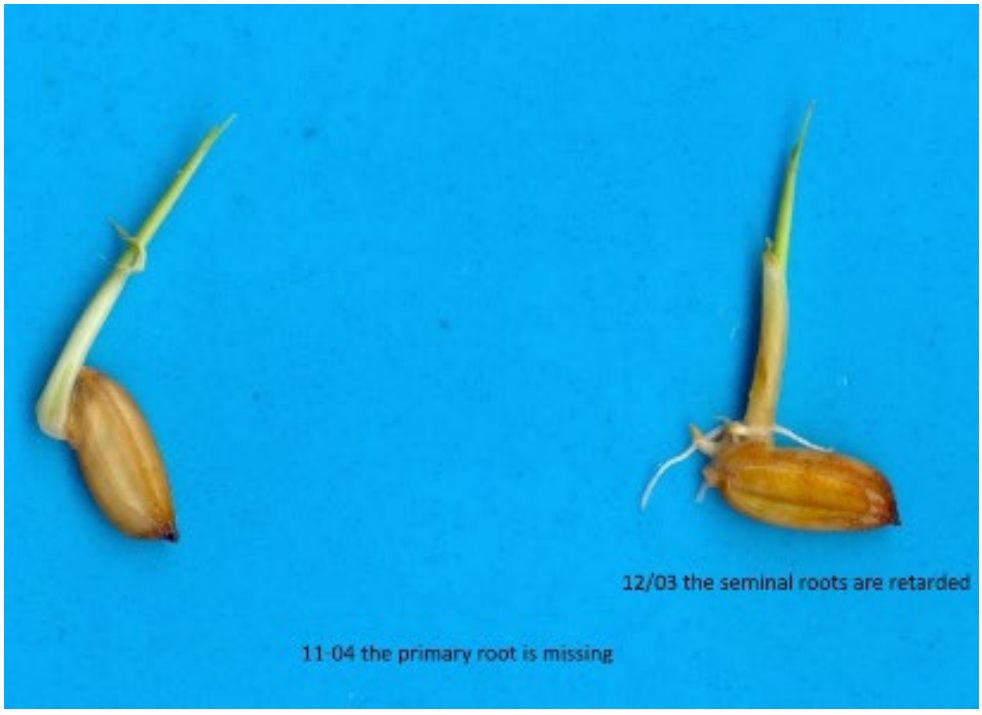
00/06 the seedling is white

Lot 3 – Normal seedlings

Lot 3 – Abnormalities



11/04 primary root is missing
41/12 the coleoptile is trapped under the lemma or the testa



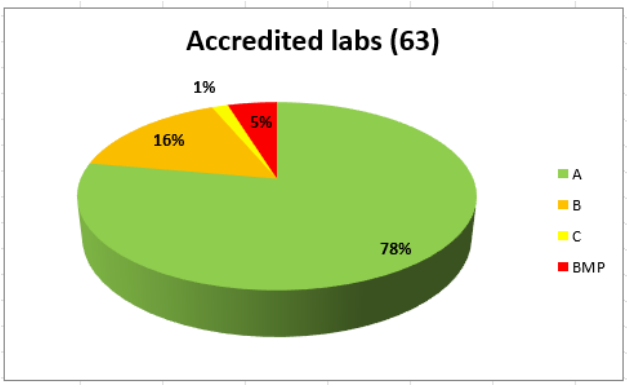
12/03 the seminal roots are retarded

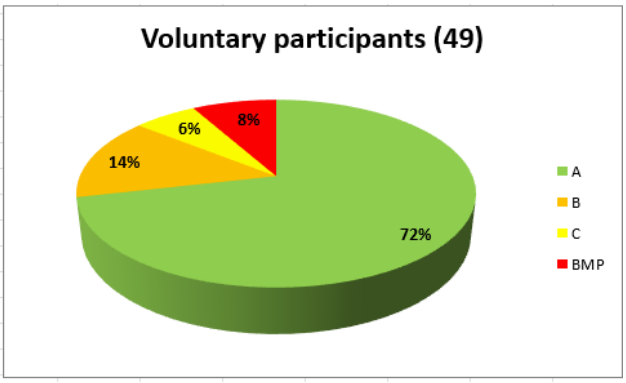
11·04 the primary root is missing

00-09 seedling decayed as a result of primary infection

Lot 3 – Non-germinated seeds

VIABILITY TEST (TZ test) Ratings **Total number of participants = 112**





Means and Standard Deviation
of the obligatory accredited participants

Categories	Mean Values %			Standard Deviation		
	Lot 1	Lot 2	Lot3	Lot 1	Lot 2	Lot 3
Viable seed	**93**	**78**	**94**	**2.12**	**7.63**	**1.90**

Method used
overview for all participants

Method	# Users		# Users TOTAL
	Accredited labs	Voluntary participants	
Longitudinal cut 1% solution, 30°C; 2h staining	**49**	**44**	**93**
Longitudinal cut* Different prep parameters	13	3	16
Excised embryo * 1% solution, 30°C; 2h staining	1		1
Piercing the seed*		1	1
Method not stated		1	1

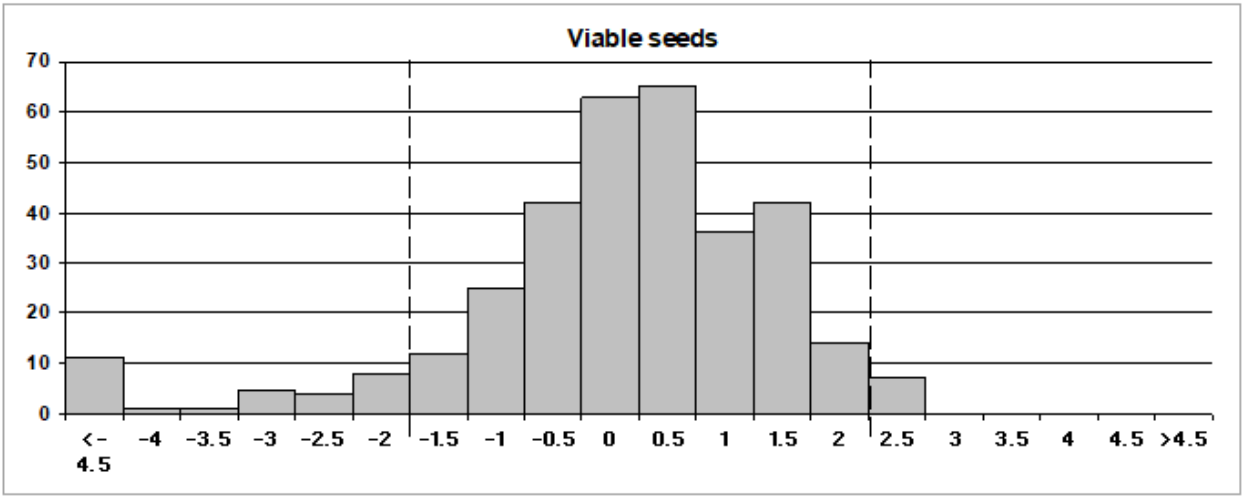
* these preparation methods are not prescribed in the ISTA Rules

Z-score Distribution

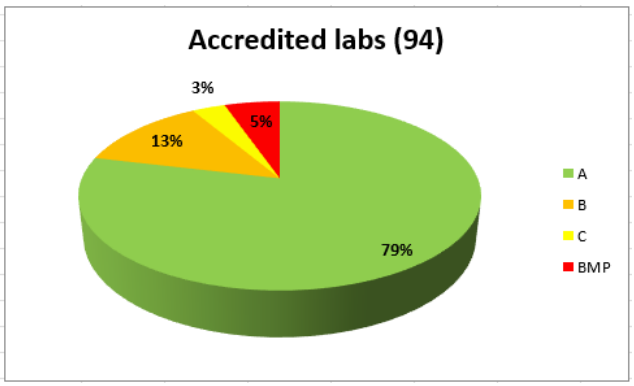
Proficiency Test Report – Test Round 25-2 O.sat

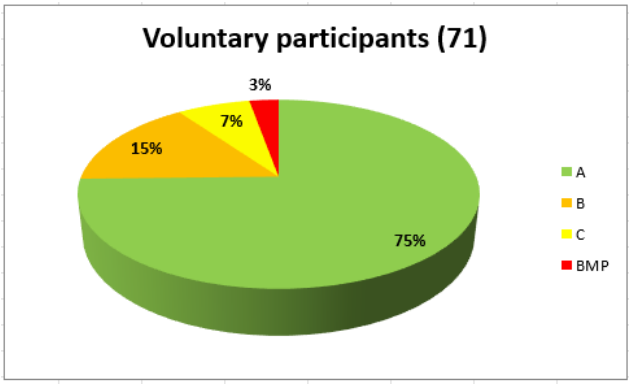
Species : Oryza sativa **Scope:** Tetrazolium

The following histogram shows the frequency distributions of all participants Z-Scores for the viability test. The Z-Scores from all three samples are included in each histogram. For further explanations, please refer to the document 'The ISTA Proficiency Test Programme'.



THOUSAND SEED WEIGHT Ratings **Total number of participants = 165**





Means and Standard Deviation
of the obligatory accredited participants

Mean Values g			Standard Deviation		
Lot 1	Lot 2	Lot3	Lot 1	Lot 2	Lot 3
26.85	29.33	43.13	0.36	0.42	0.53

Method used
overview for all participants

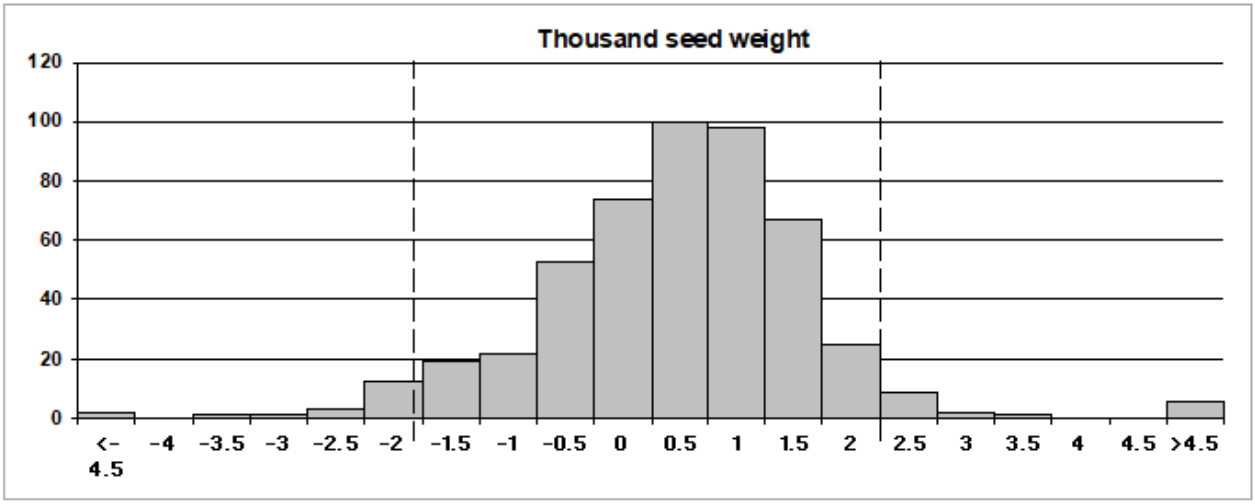
Method	# Users		# Users TOTAL
	Accredited labs	Voluntary participants	
Counting replicates	69	60	**129**
Count the whole pure seed fraction	25	11	**36**

Z-score Distribution

Proficiency Test Report – Test Round 25-2 O.sat

Species : Oryza sativa **Scope:** Thousand seed weight

The following histogram shows the frequency distributions of all participants Z-Scores for the thousand seed weight test. The Z-Scores from all three samples are included in the histogram. For further explanations, please refer to the document 'The ISTA Proficiency Test Programme'.



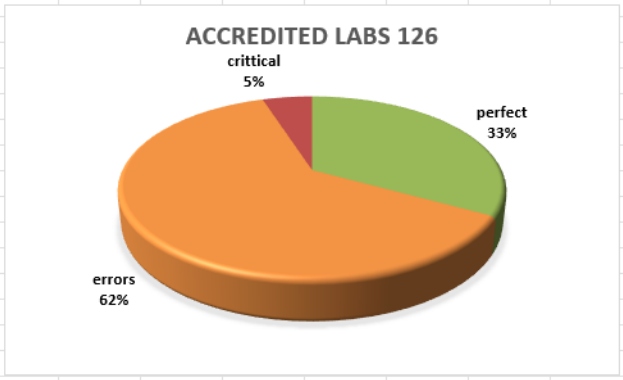
REPORTING ON THE ISTA ORANGE CERTIFICATES

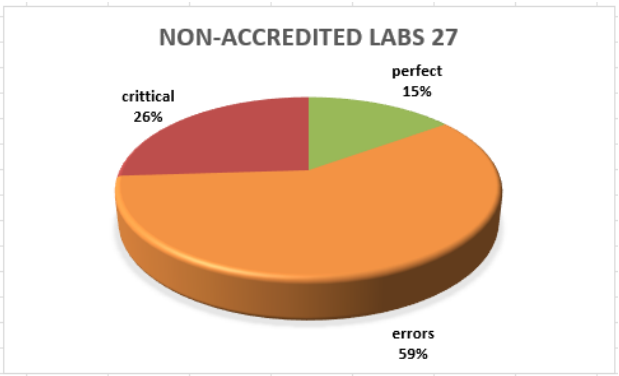
This exercise was voluntary for all participants.
The completion of the certificate has a training purpose only and it is not rated.

Out of 197 participants, the completed certificate was submitted for review by 153 participants (78%).
Out of 153 submissions, 126 were from the accredited laboratories and 27 from non-accredited.

Quality of completing the certificates:

126 Accredited laboratories		27 Non-accredited laboratories	
NO error 42 labs	33%	NO error 4 labs	15%
Minor and major errors 78 labs	62%	Minor and major errors 16 labs	59%
Critical errors 6 labs	5%	Critical errors 7 labs	26%
Critical errors: Certificate is invalid because of • Handwriting or • Stamp missing or • Signature missing or • Date of issue missing or • Signs of data alternation/erasures			





Each participating laboratory receives a personalised report on how the Orange Certificate was completed.