



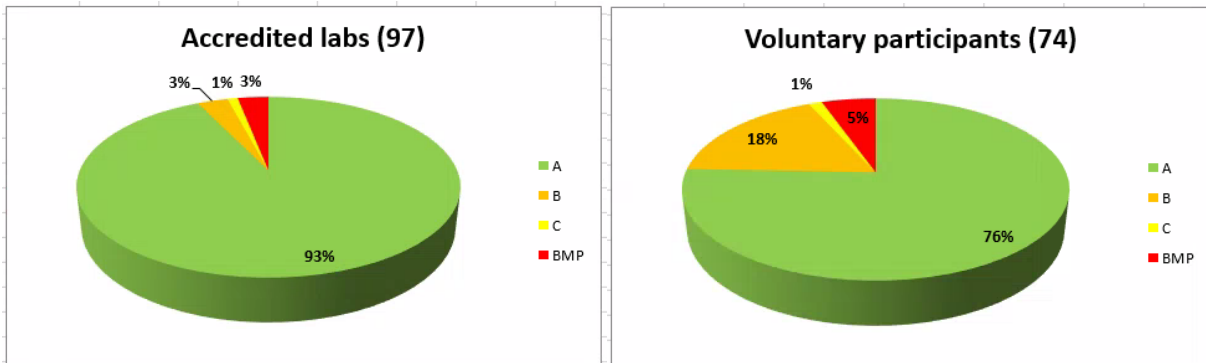
Summary results: PT 21-2 M.sat

Species: *Medicago sativa*

Scope: PUR, OSD, GER, TZ, completion of OIC

PURITY Ratings

Total number of participants = 171



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	98.8	99.3	99.0	0.22	0.26	0.19
Other seed	0.5	0.2	0.4	-	-	-
Inert matter	0.7	0.5	0.6	-	-	-



INTERNATIONAL SEED TESTING ASSOCIATION (ISTA)

Secretariat, Zürichstrasse 50, 8303 Bassersdorf, CH-Switzerland

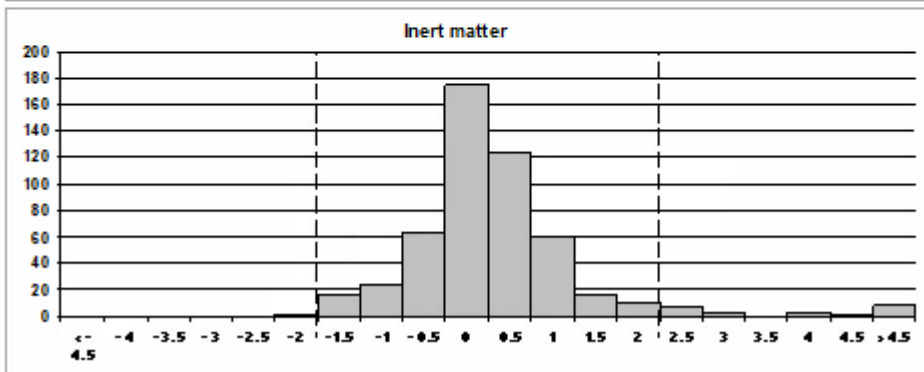
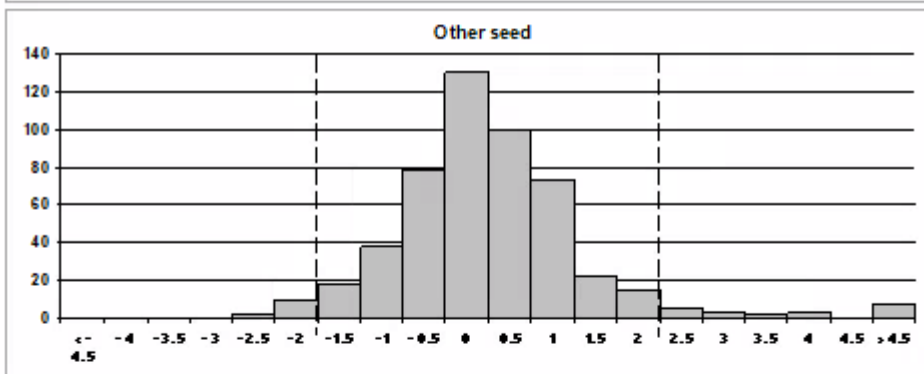
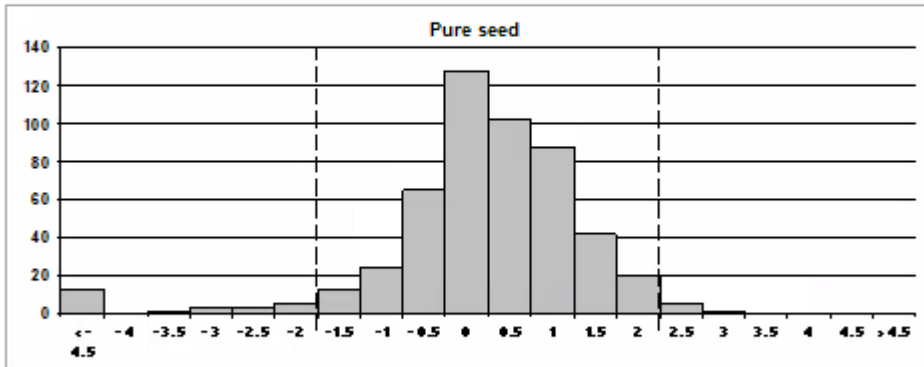
Phone: +41-44-838 60 00, Fax: +41-44-838 60 01, Email: ista.office@ista.ch, <http://www.seedtest.org>

Z-score Distribution

Species: *Medicago sativa*

Scope: Purity

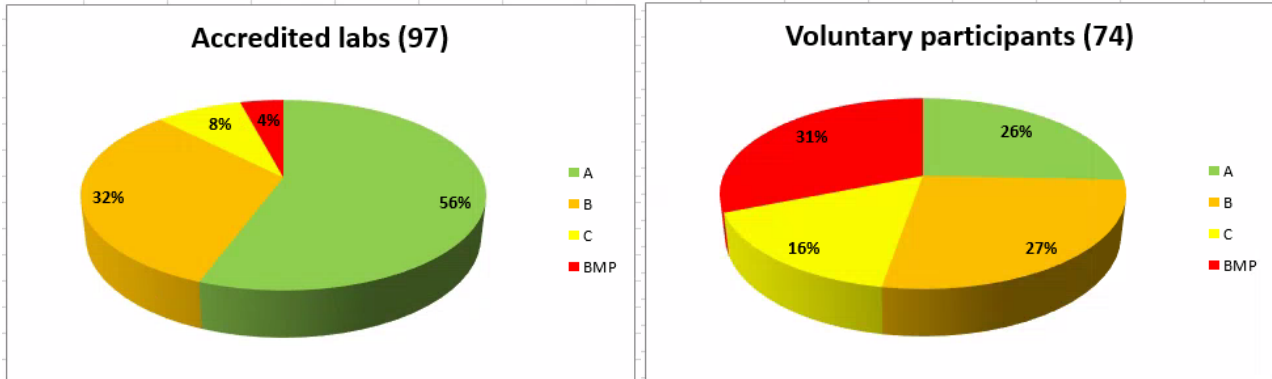
The following histograms show the frequency distributions of all participants Z-Scores for the relevant components, i.e. Pure seed and Inert matter and Other seed. The Z-Scores from all three samples are included in each histogram. For further explanations, please refer to the document 'The ISTA Proficiency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





OSD Ratings

Total number of participants = 171



Retrieval rates

Species: *Medicago 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 <i>Astragalus cicer</i>	4	2.0	49.7	1
	2 <i>Panicum virgatum</i>	3	2.2	74.8	1
	3 <i>Phleum pratense</i>	4	3.5	87.9	2
Lot 2	1 <i>Anthemis cotula</i>	2	1.8	88.3	2
	2 <i>Brassica rapa</i>	2	1.0	51.4	1
	3 <i>Chenopodium album</i>	2	1.8	88.9	2
	4 <i>Trifolium repens</i>	3	2.6	86.1	2
Lot 3	1 <i>Melilotus officinalis</i>	4	2.0	49.0	1
	2 <i>Setaria pumila</i>	2	1.8	89.2	2
	3 <i>Trifolium pratense</i>	3	2.6	85.4	2



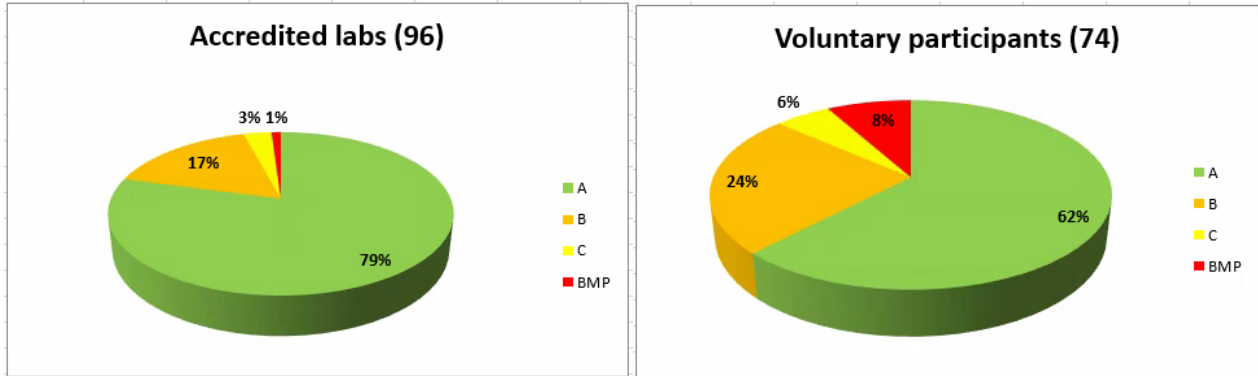
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GERMINATION Ratings

Total number of participants = 170



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	79	76	88	2.72	6.28	3.05
Abnormal seedlings	3	10	4	-	-	-
Non-germinated seed	18	14	8	-	-	-

Method used

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

Temperature °C	# Users		# Users TOTAL
	Accredited labs	Voluntary participants	
20	96	74	170



Substrate	# Users		# Users TOTAL
	Accredited labs	Voluntary participants	
TP	71	42	113
BP	14	22	36
PP	10	7	17
TPS	0	2	2
Not reported	1	1	2

Pretreatment	# Users		# Users TOTAL
	Accredited labs	Voluntary participants	
No Treatment	56	38	94
Prechill	33	33	66
light	3	1	4
cut	0	1	1
Not reported	4	0	4



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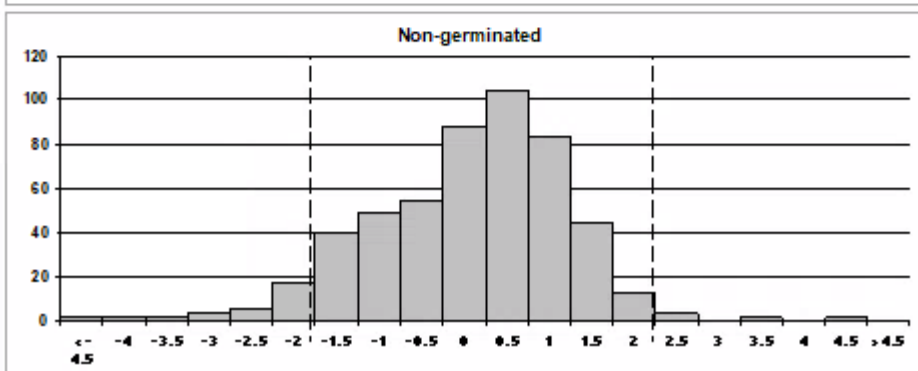
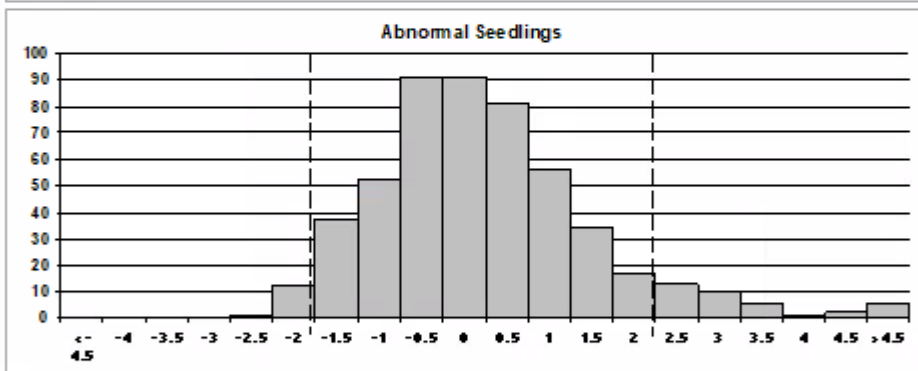
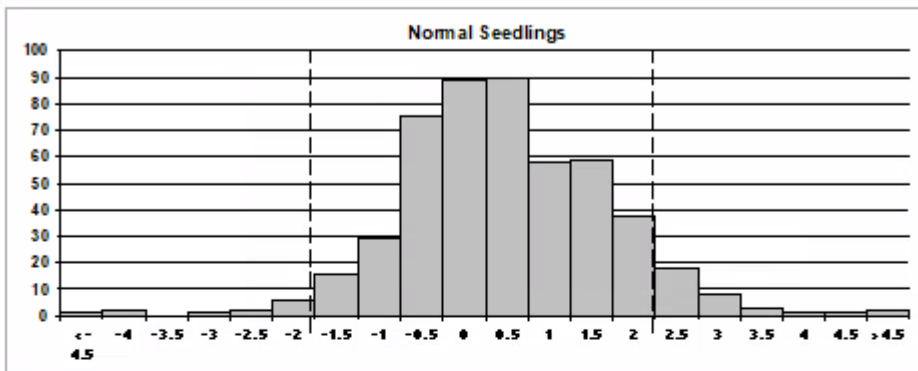
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Z-score Distribution

Species: *Medicago sativa*

Scope: Germination

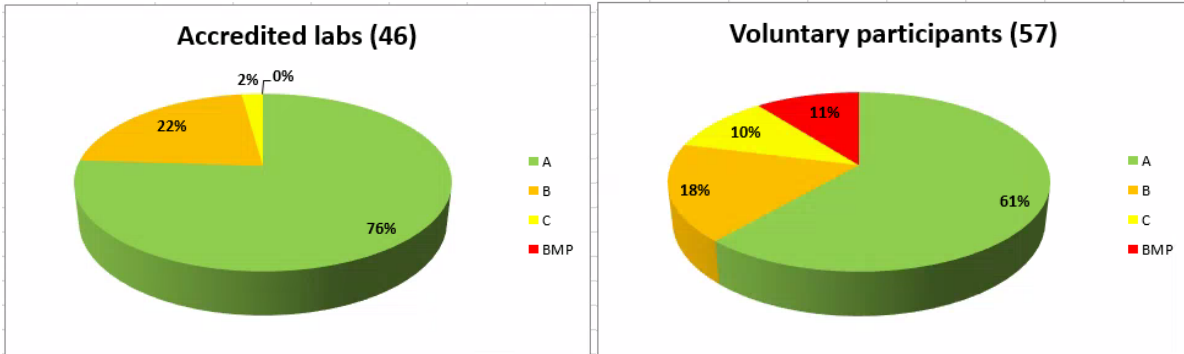
The following histograms show the frequency distributions of all participants Z-Scores for the relevant components, i.e. **Normal Seedlings** and **Abnormal Seedlings** and **Non-germinated Seeds**. The Z-Scores from all three samples are included in each histogram. For further explanations, please refer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





TETRAZOLIUM TEST Ratings

Total number of participants = 103



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	85	91	94	2.70	3.48	1.69

Method used

overview for all participants

presented for the preparatory method, solution concentration, temperature and staining time duration

Method	# Users		# Users TOTAL
	Accredited labs	Voluntary participants	
No preparation	28	11	39
Removal of seed coat	15	36	51
Piercing the seed	3	4	7
Excise embryo	0	1	1
Not reported	0	5	5



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Solution %	# Users		# Users TOTAL
	Accredited labs	Voluntary participants	
1.0	44	51	95
0.5	2	2	4
0.2	0	1	1
1.5	0	1	1
Not reported	0	2	2

Temperature °C	# Users		# Users TOTAL
	Accredited labs	Voluntary participants	
30	42	46	88
32, 34, 35, 37	3	4	7
20 and 25	0	5	5
40 and 45	1	1	2
Not reported	0	1	1

Staining time (hours)	# Users		# Users TOTAL
	Accredited labs	Voluntary participants	
18 and 21	44	53	97
5, 7 and 8	1	2	3
0.2 and 1	1	1	2
Not reported	0	1	1

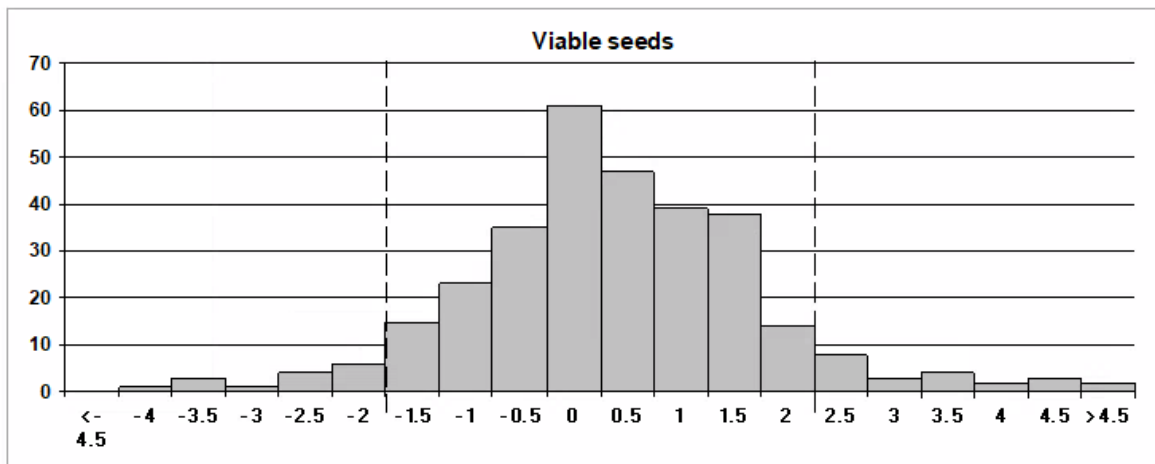


Z-score Distribution

Species : Medicago 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'.



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 171 participants, the completed certificate was submitted for the review by 129 participants (75%). Our of 129 submission, 105 were from the accredited laboratories and 24 from non-accredited.

Quality of completing the certificates:

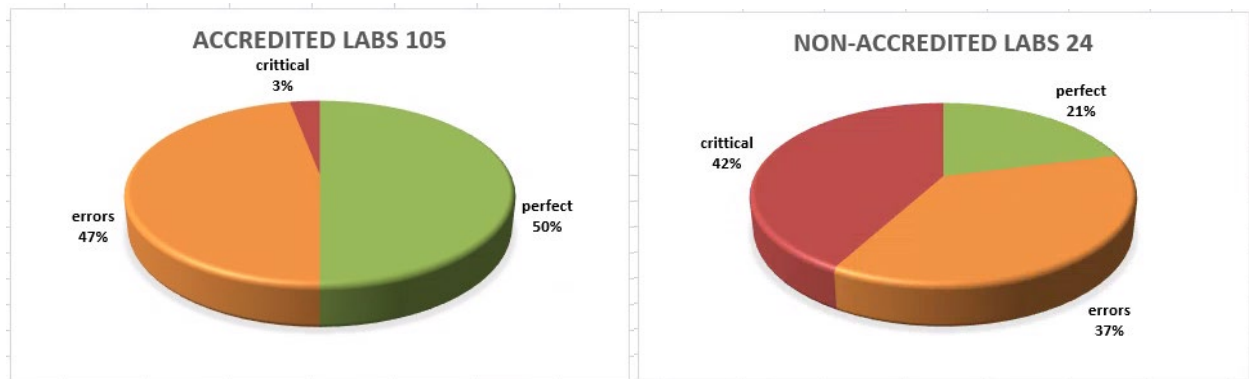
105 accredited laboratories		24 non-accredited laboratories	
NO error 53 labs	50%	No error 5 labs	21%
Minor and major errors 49 labs	47%	Minor and major errors 9 labs	37%
Critical errors 3 labs	3%	Critical errors 10 labs	42%
Critical error: certificate is invalid because of			
<ul style="list-style-type: none"> • Handwriting or • Stamp missing or • Signature missing or • Date of issue missing or • Signs of data alternation/erasures 			



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