

# ISTA Ordinary Meeting 2005

Bangkok

# Proficiency Test Committee Session

- Report by Günter Müller

# Members of PTC

- Günter Müller Germany (Chair)
- Didier Demilly France (Vice-Chair)
- Joël Léchappé France
- Doug Ashton Canada
- Ken Allison Canada
- Mari Jürmann Estonia
- Rita Zecchinelli Italy
- Pamela J. Strauss South Africa
- Caroline Cadger United Kingdom
- Ronald Don United Kingdom
- Sharon Davidson United States
- Timothy J. Gutormson United States

# Content

- ISTA Proficiency Test Programme 2004-2007.
- Germination and OSD Results.
- Germination Overall Rating Summary.
- Proposed In-Round Rating System for OSD.
- Prospect (Evaluation of Purity Test Results).

# Proficiency Test Rounds 2004-2005

Round	Species	Tests
04-3	<i>Phleum pratense</i>	P, G, OSD, OIC
05-1	<i>Cynodon dactylon</i> <i>Zinnia elegans</i>	P, G, OSD G
05-2	<i>Secale cereale</i>	P, G, OSD, Moisture, OIC
05-3	<i>Capsicum annuum</i> <i>Pisum sativum</i>	G VIG

# Proficiency Test Rounds 2006-2007

Round	Species	Tests
6-1	<i>Sorghum bicolor</i>	P, G, OSD, OIC
6-2	<i>Beta vulgaris</i>	P, G, OSD
6-3	<i>Phaseolus vulgaris</i>	G
7-1	<i>Panicum maximum</i>	P, G, OSD, OIC, TZ
7-2	<i>Medicago sativa</i>	P, G, OSD, Moisture, TZ
7-3	<i>Raphanus sativus</i>	P, G, OSD

# OSD Test Round 04-3 *Phleum pratense*

## Other Seed Inclusions

Sample 1	Sample 2	Sample 3
<i>Anthemis cotula</i> *	<i>Plantago major</i> *	<i>Capsella bursa - pastoris</i> *
<i>Lotus corniculatus</i> *	<i>Poa pratensis</i> *	<i>Cirsium arvense</i> *
<i>Panicum capillare</i> *	<i>Tripleurospermum perforatum</i> *	<i>Echinochloa crus- galli</i> *
<i>Silene noctiflora</i> *		<i>Trifolium repens</i> *

# In-round Rating System for Purity, Germination, Moisture and Tetrazolium.

- A Sum of absolute Z-scores\*  $\leq 3,5$
- B Sum of absolute Z-scores  $\leq 5,3$
- C Sum of absolute Z-scores  $\leq 7,0$
- BMP Sum of absolute Z-scores  $> 7,0$

\* GER: Z-Scores of the Normal Seedlings component  
PUR: Z-Scores of the Pure Seed component

# Scope: Germination

## In-round ratings after seven test rounds.

Test Round	A	B	C	BMP
	Number of laboratories			
<i>Pisum sativum</i>	78	24	12	7
<i>Trifolium incarnatum</i>	86	14	2	11
<i>Zea mays</i>	94	17	5	5
<i>Lycopersicon escul.</i>	78	22	3	9
<i>Brassica napus</i>	85	16	6	10
<i>Helianthus annuus</i>	86	13	4	10
<i>Phleum pratense</i>	63	18	5	6

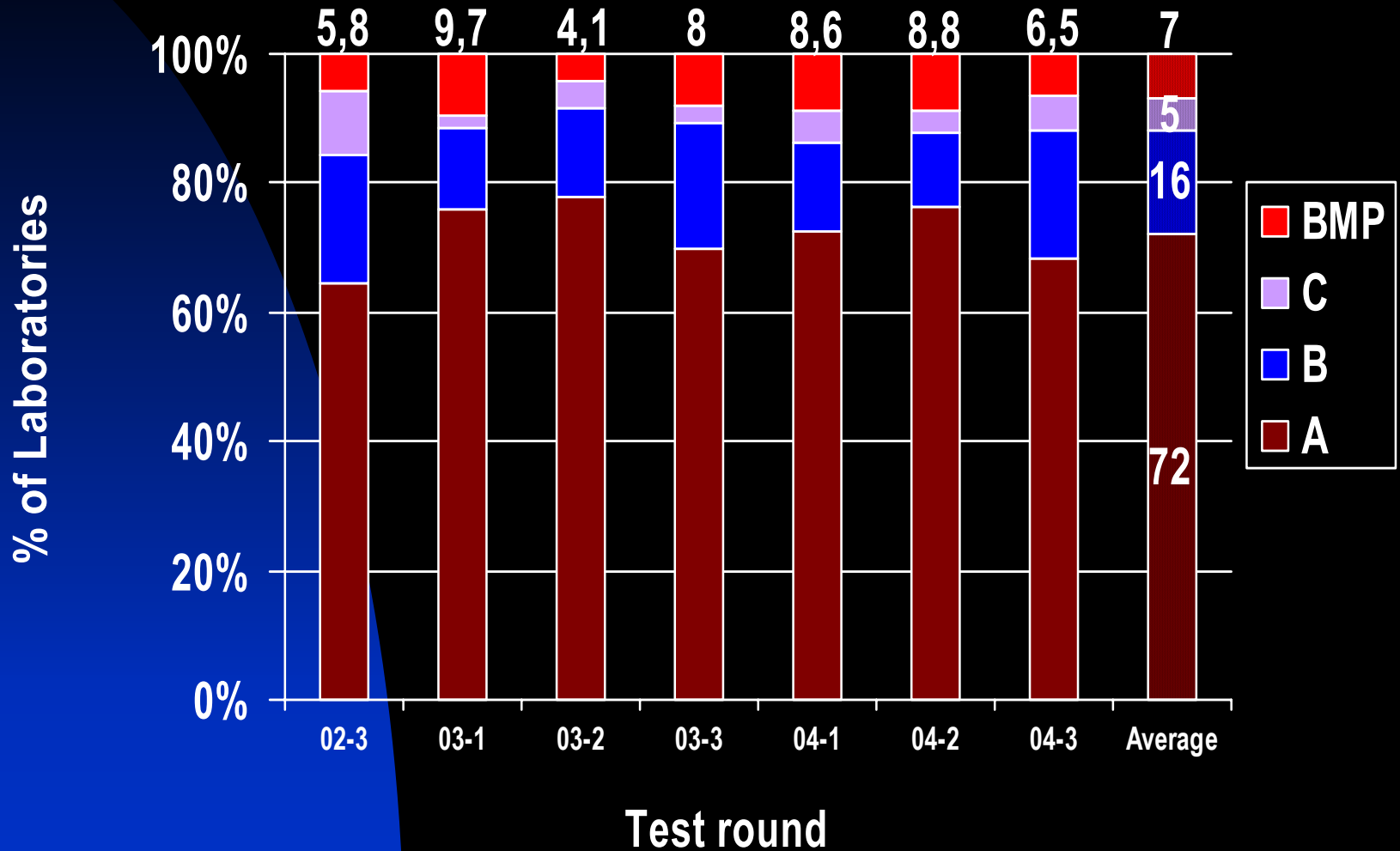
# Scope: Germination

## In-round ratings after seven test rounds.

Test Round	A	B	C	BMP
	% of all laboratories			
<i>Pisum sativum</i>	64	20	10	6
<i>Trifolium incarnatum</i>	76	12	2	10
<i>Zea mays</i>	78	14	4	4
<i>Lycopersicon escul.</i>	69	20	3	8
<i>Brassica napus</i>	73	14	5	8
<i>Helianthus annuus</i>	76	11	4	9
<i>Phleum pratense</i>	68	20	5	7
<b>Average</b>	<b>72</b>	<b>16</b>	<b>5</b>	<b>7</b>

# Scope: Germination

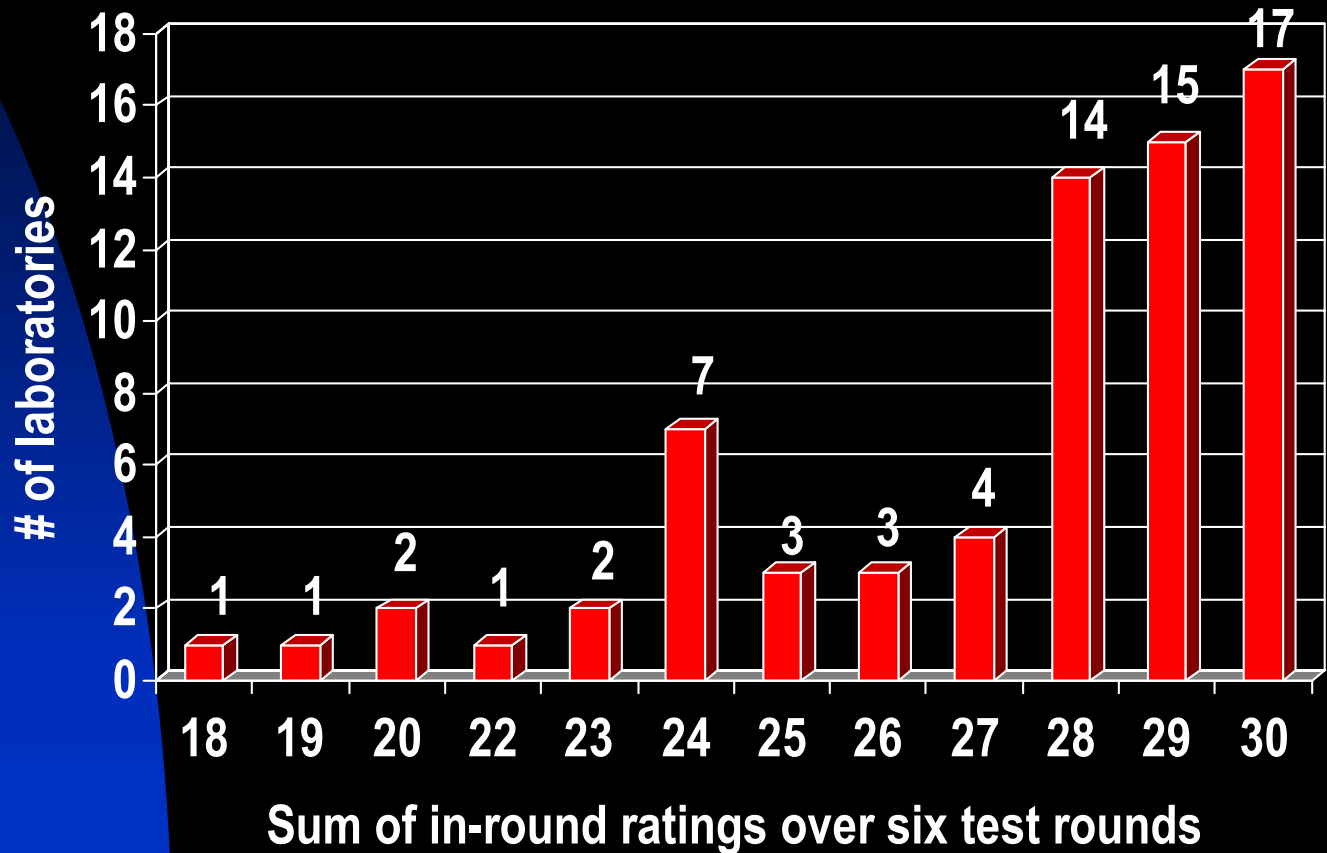
## n-round ratings after seven test rounds (graph).



# Overall Rating for all Test Types

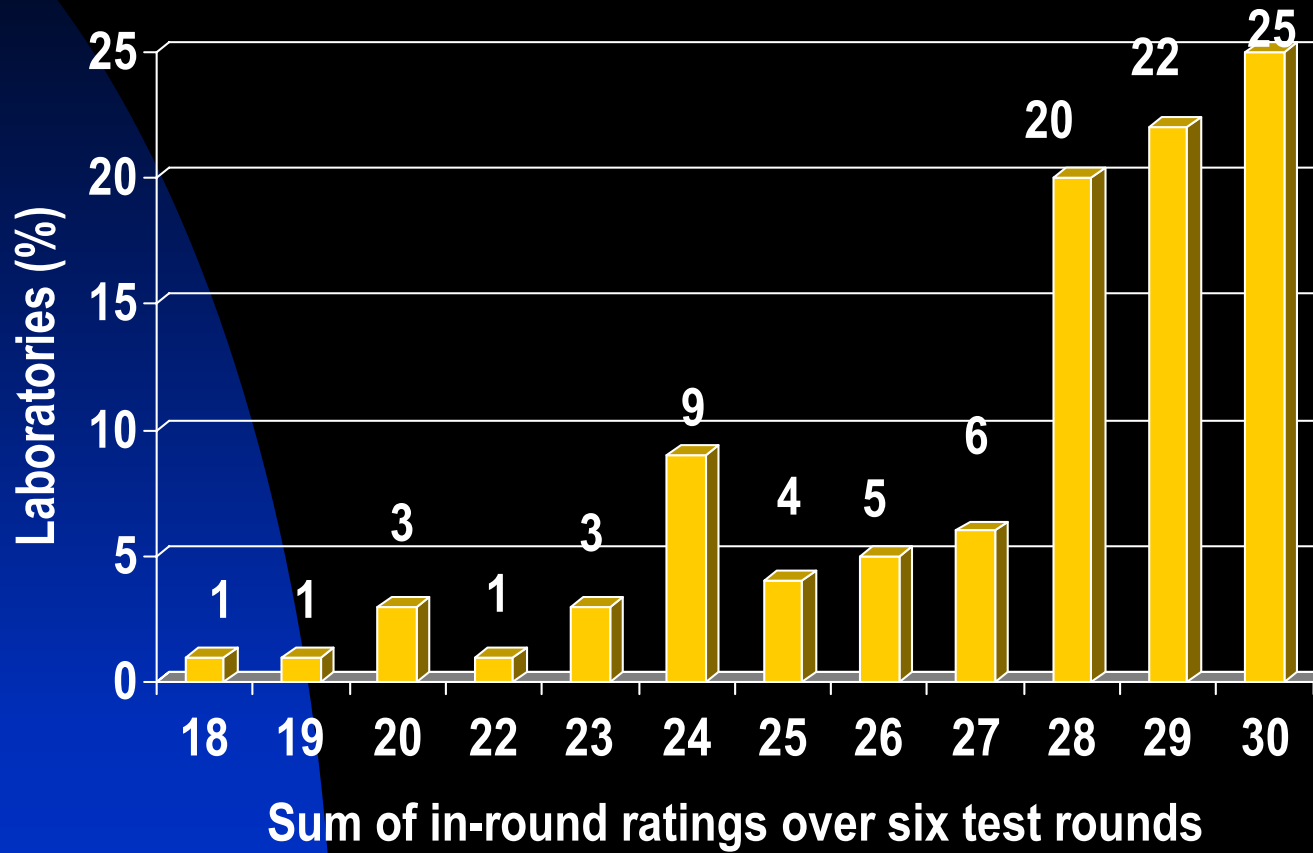
Score	Attributed value	Sum of in-round ratings	Overall score
A	5	28-30	A
B	4	21-27	B
C	3	16-20	C
BMP	0	Below 16	BMP

# Scope: Germination Laboratories' overall-rating (total sum of six ratings). n= 70

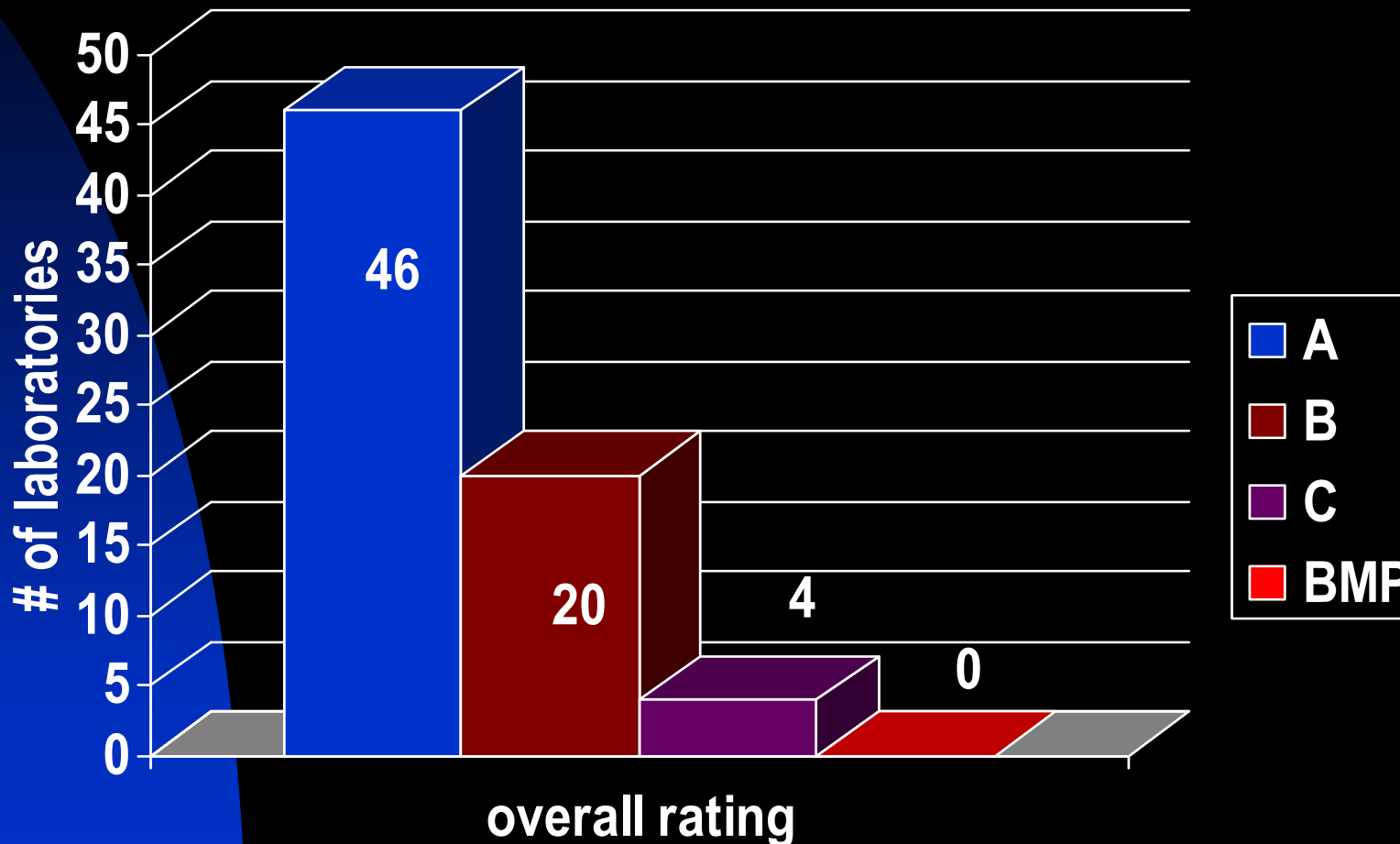


# Scope: Germination

## Laboratories' overall-rating (total sum of six ratings). n= 70



# Scope: Germination Laboratories' overall-rating after six test rounds. n=70



# In-round rating system for OSD

- No distinction between retrieval and identification.
- Different numbers of species.
- Different degree of difficulty.
- Total number of seeds added influences the impact a single seed missed has.

# In-round rating system for OSD - proposals

- Distinct between retrieval and identification – yet to be evaluated.
- Add about the same number of seeds per species.
- Take the degree of difficulty into account.
- Do not vary the total number of seeds considerably and adapt thresholds.

# In-round rating thresholds for OSD

Total retrieval rate (%)	Assigned value
$\geq 90$	3
$\geq 85$	2
$\geq 80$	1

# In-round rating system for OSD – Scoring based on total retrieval rate

Score	Retrieved and identified seeds (%)	
	old	new
A	$\geq 90$	$\geq 90$
B	$\geq 85$	$\geq 80$
C	$\geq 80$	$\geq 70$
BMP	$< 80$	$< 70$

# Example Test Round 04-1 - *Brassica napus*

Species	Seeds added	Retrieval rate (%)	Score	Seeds found	Multipli- cation	
					1x3	4x3
	1	2	3	4	1x3	4x3
<i>Galeopsis tetrahit</i>	2	88	2	2	4	4
<i>Galium aparine</i>	3	93	3	3	9	9
<i>Sinapis alba</i>	4	83	2	4	8	8
<i>Chenopodium sp.</i>	3	84	2	3	6	6
<i>Polygonum aviculare</i>	3	91	3	3	9	9

Species	Seeds added	Retrieval rate (%)	Score	Seeds found	Multipli- cation	
					1x3	4x3
	1	2	3	4	1x3	4x3
<i>Sinapis arvensis</i>	3	61	1	3	3	3
<i>Lotus corniculatus</i>	4	72	1	0	4	0
<i>Raphanus sativus</i>	4	81	2	4	8	8
<i>Thlaspi arvensis</i>	2	79	1	0	2	0
...	...					
<b>Total Sum</b>	<b>28</b>			<b>22</b>	<b>53</b>	<b>47</b>
<b>Percentage</b>				<b>79</b>		<b>89</b>
<b>In-round rating</b>				<b>BMP</b>		<b>B</b>

# Scope: OSD

## In-round ratings after four test rounds – proposed rating system.

Test round	A	B	C	BMP
	Number of laboratories			
<i>Trifolium incarnatum</i>	74	17	12	10
<i>Lycopersicon escul.</i>	90	9	7	6
<i>Brassica napus</i>	73	19	5	18
<i>Phleum pratense</i>	77	8	4	2

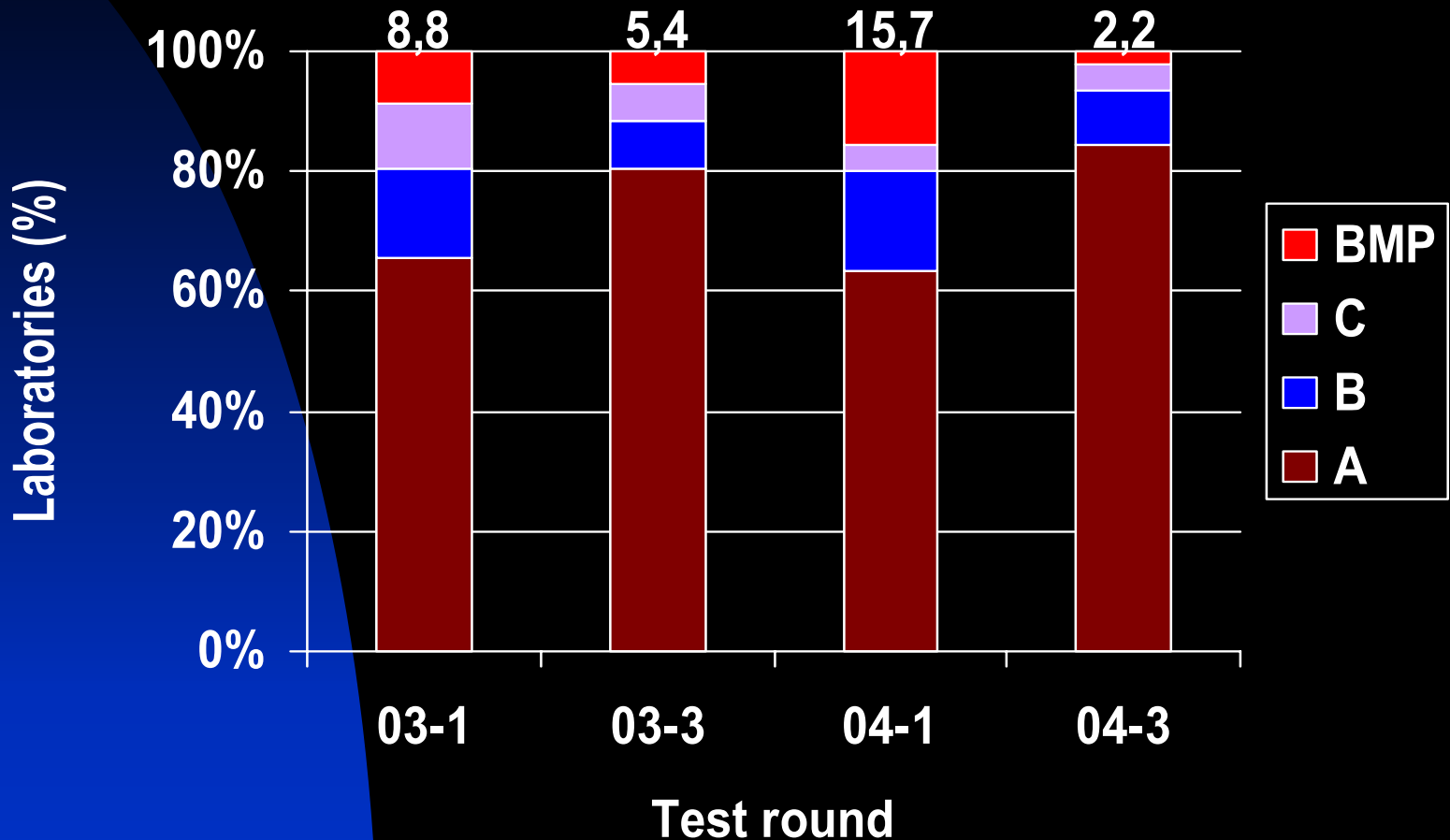
# Scope: OSD

## In-round ratings after four test rounds – proposed rating system.

Test Round	A	B	C	BMP
	% of all laboratories			
<i>Trifolium incarnatum</i>	65	15	11	9
<i>Lycopersicon escul.</i>	81	8	6	5
<i>Brassica napus</i>	63	17	4	16
<i>Phleum pratense</i>	85	9	4	2

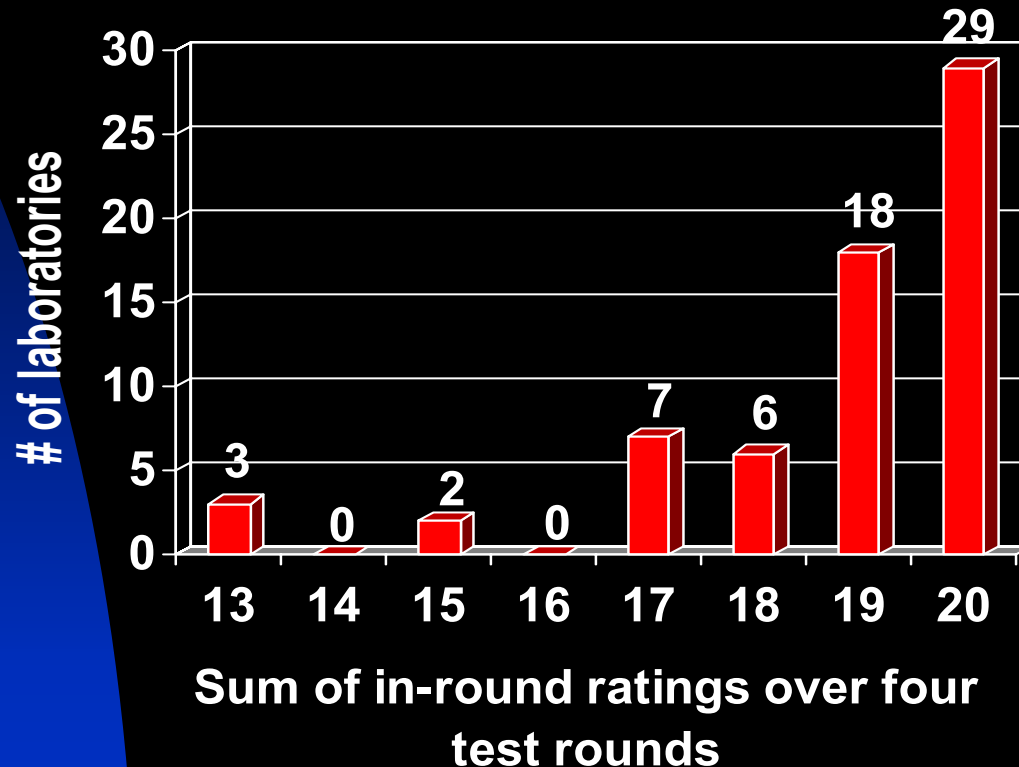
# Scope: OSD

## In-round ratings after four test rounds (graph).



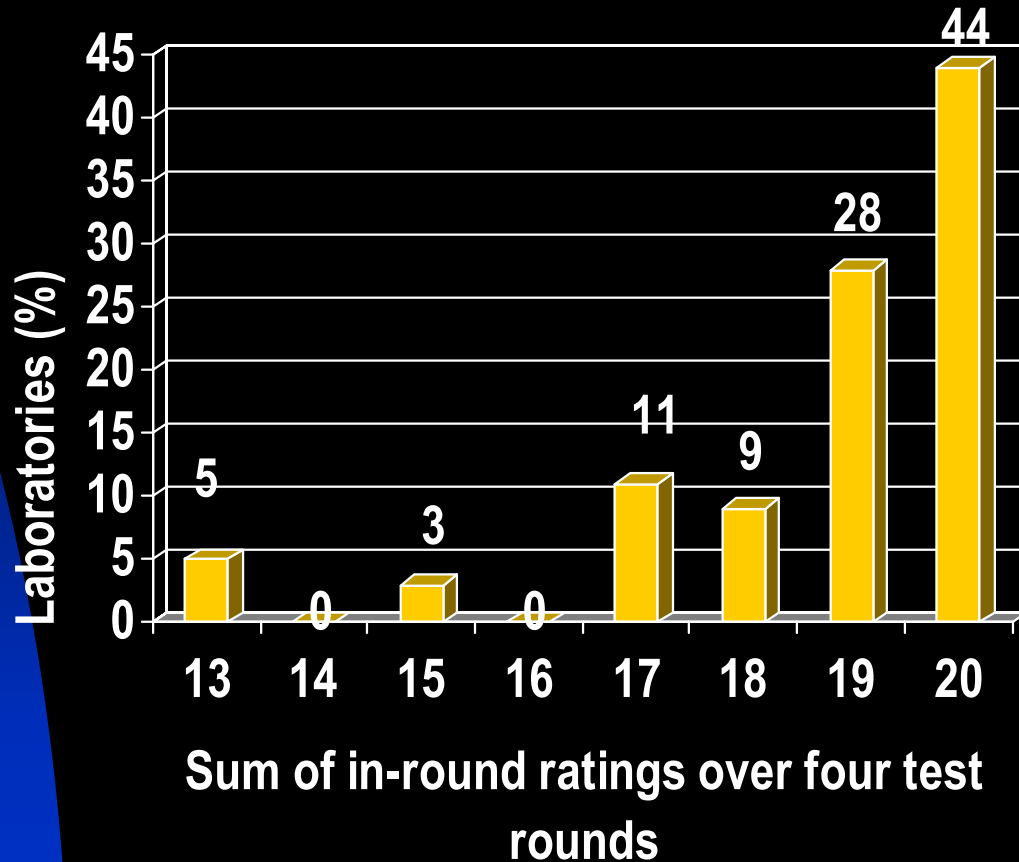
# Scope: OSD

## Laboratories' overall-rating (total sum of four ratings). n=65



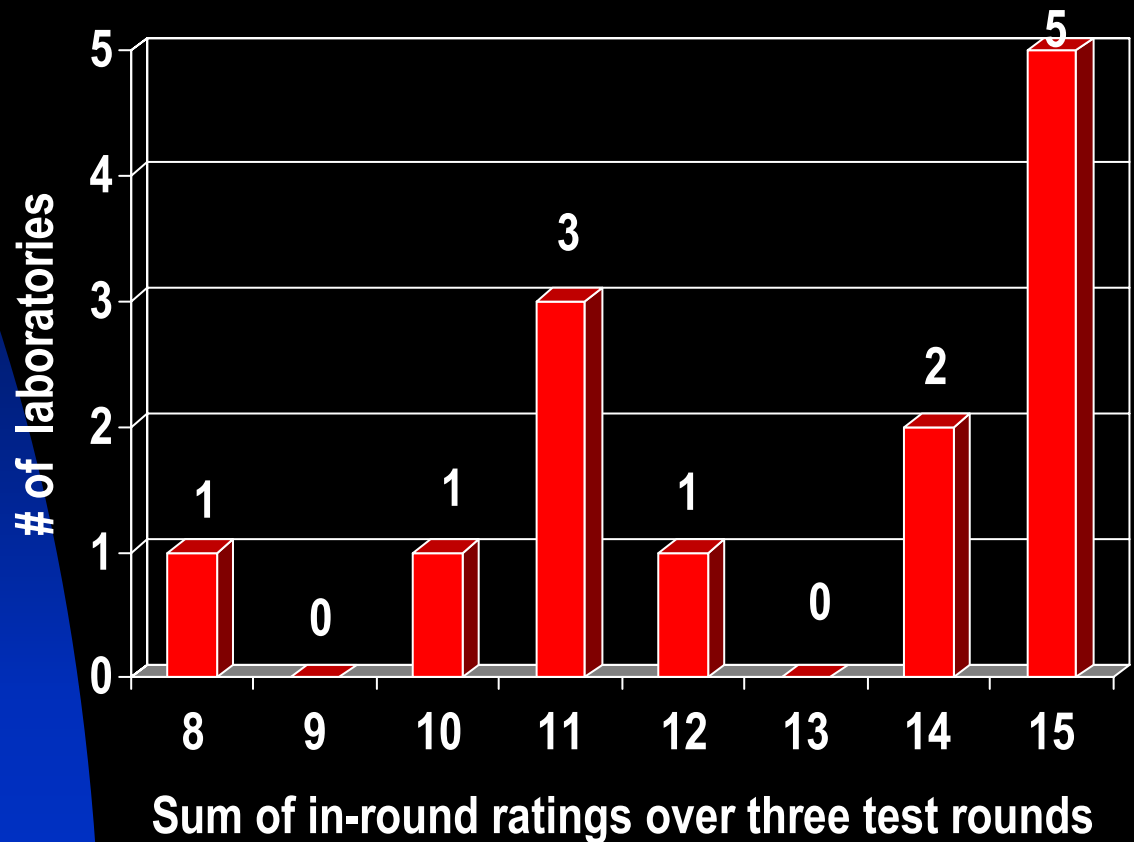
# Scope: Germination

## Laboratories' overall-rating (total sum of four ratings). n=65



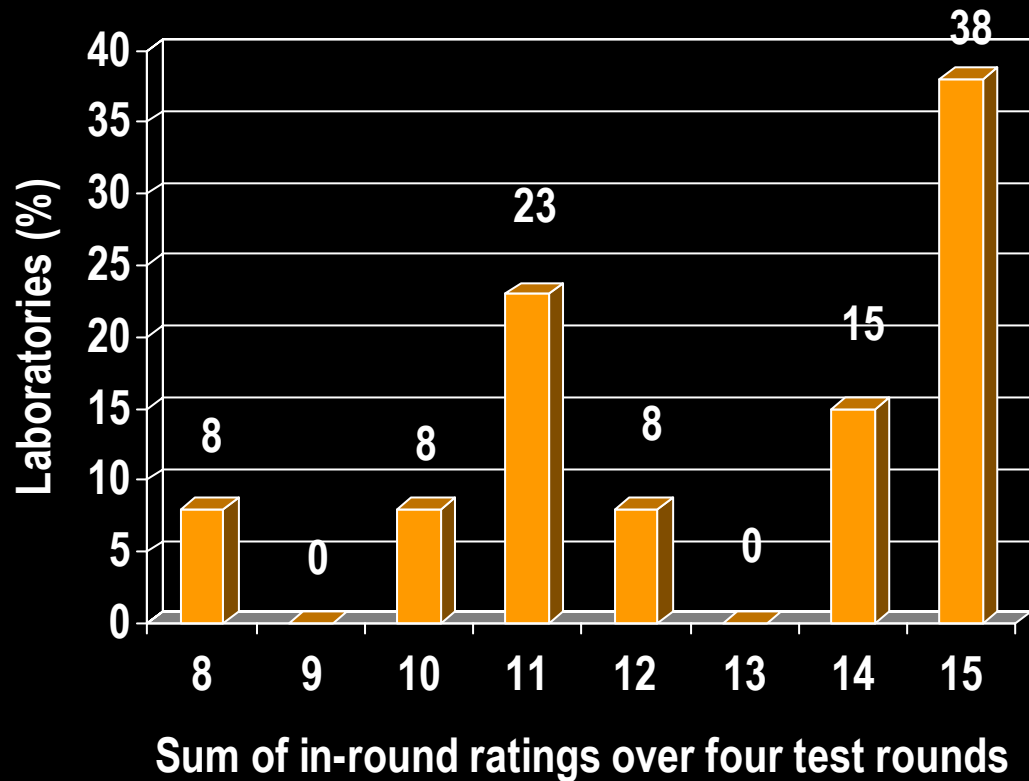
# Scope: OSD

## Laboratories' overall-rating (total sum of three ratings). n=13



# Scope: OSD

Laboratories overall-rating (total sum of three ratings). n=13



# Prospect

- Develop an evaluation procedure for purity test results