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Canadian Food Inspection Agency

Our Vision:
To excel as a science-based regulator, trusted and respected by Canadians and the international community.

Our Mission:
Dedicated to safeguarding food, animals and plants, which enhances the health and well-being of Canada's people, environment and economy.

Soybean Seedling Virtual Evaluation Referee

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June, 2011

Canada

Objectives

Soybean Seedling Evaluation Referee

- To promote precision, standardization, and uniformity among seed laboratories.
- To evaluate the adequacy of the interpretation of seed testing rules in AOSA and M&P.
- To provide data to be used as supporting evidence for testing procedure or rule changes.
- To identify specific areas that research is needed to promote uniformity among laboratories.

Seedling Evaluation Participants

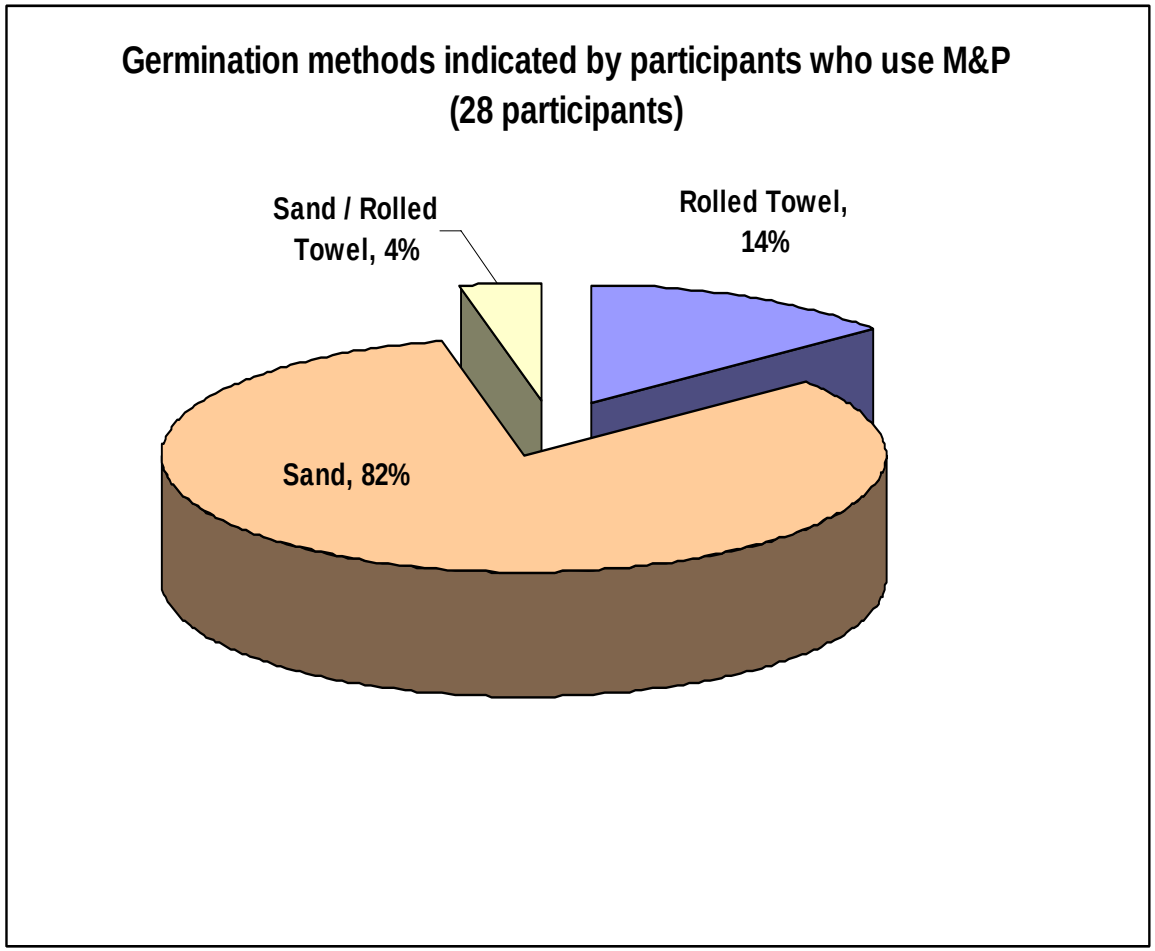
Soybean Seedling Evaluation Referee

No. of Participants 77		Number of Sample Tested by Participants		
		No. of Sample Tested	Participant No. or Percentage	
AOSA	49 (64%)	0	8	17%
		1-25	5	11%
		25-100	2	4%
		>100	32	68%
M&P	28(36%)	0	8	28%
		1-25	3	11%
		25-100	1	4%
		>100	16	57%

Method Survey-M&P

Soybean Seedling Evaluation Referee

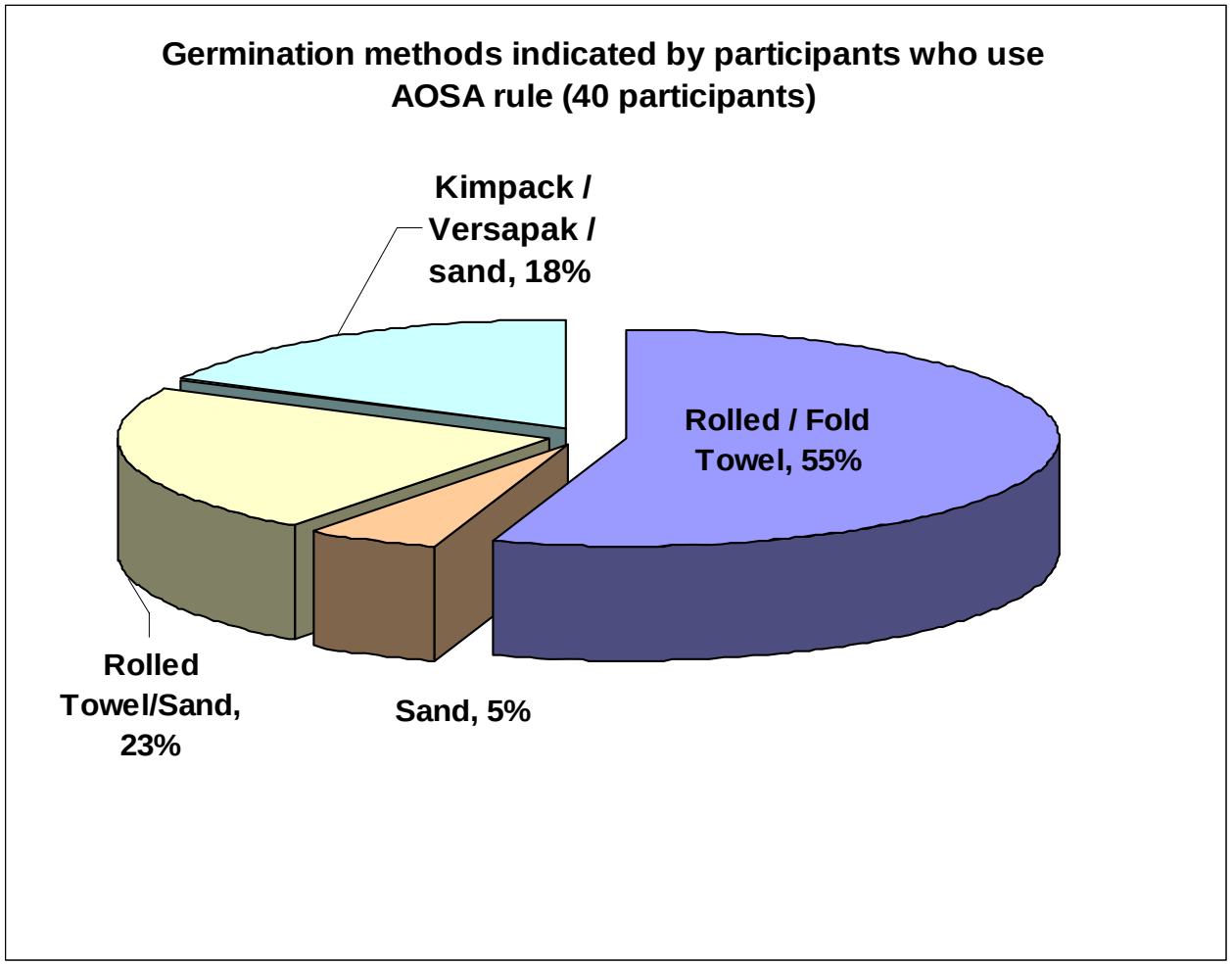
- Sand is the most common substrate



Method Survey- AOSA

Soybean Seedling Evaluation Referee

- RT is the most common substrate



Evaluations:

Picture No.	Answer	M&P (28 participants)		AOSA (49 participants)	
		Normal (+)	Abnormal (-)	Normal (+)	Abnormal (-)
1	+	25	3	46	3
		89%	11%	94%	6%
2	-	2	26	2	47
		7%	93%	4%	96%
3	+	16	12	45	4
		57%	43%	92%	8%
4*	-	18	10	36	13
		64%	36%	73%	27%
5	-	1	27	7	42
		4%	96%	14%	86%
6	+	23	5	28	21
		82%	18%	57%	43%
7	-	2	26	4	45
		7%	93%	8%	92%
8	+	27	1	48	1
		96%	4%	98%	2%
9	-	5	23	1	48
		18%	82%	2%	98%
10	+	18	10	13	36
		64%	36%	27%	73%
11	-	1	27	0	49
		4%	96%	0%	100%
12	-	3	25	15	34
		11%	89%	31%	69%

Variable results:

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- Seedlings 10
- AOSA: abnormal- 73%
- M&P: normal – 64%
- M&P give preference to normal:
  - If one border-line seedling classify it normal
  - If 3 border-line seedlings classify 2 normal

Seedling No. 10

Conductive tissue Infection?

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- Seedling No.4: Abnormal or Normal?
  - Lesion at the base – infection causing abnormal roots
  - Conductive tissue browned by decay or infection

Seedling No. 4

Rule differences:

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- AOSA:
  - Seedling 3 & 9: more uniform results

Seedling No. 9

Seedling No. 3

- M&P:
  - Seedling 6 & 12: more uniform results

Seedling No. 6

Seedling No. 12

Clear classification

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76 out of 77
Analysts classified Abnormal.

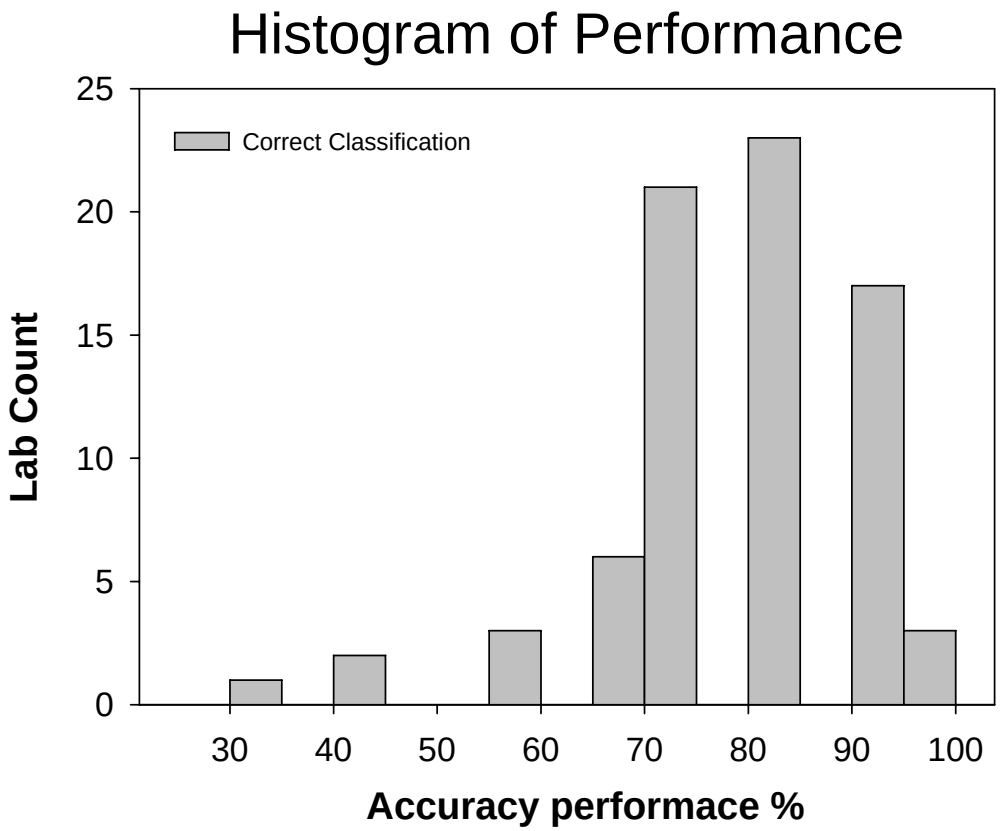
Uniform results!

Seedling No. 11

Performance of the participants

Correctly classified

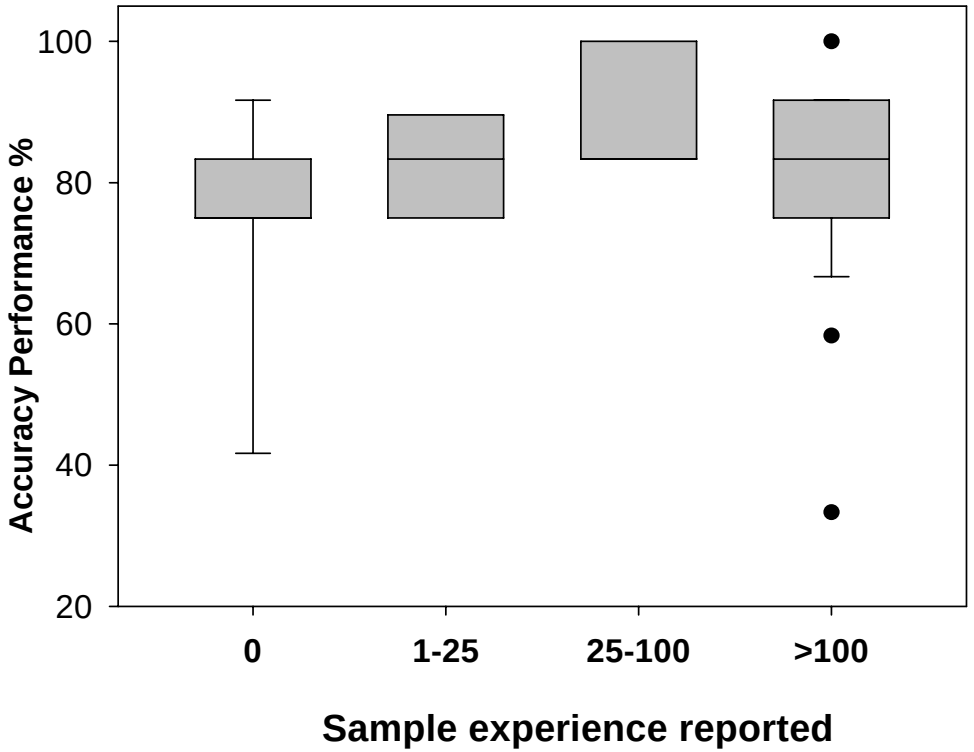
- 57% participants achieved ≥80% accuracy
- 35% participants achieved between 70% and 80% accuracy
- 8% participants had <70% accuracy



Accuracy and lab experience

Soybean Seedling Evaluation Referee

- Higher performance came from the more experienced groups.
- Performance variation is large in the group with no sample experience and also present with those with > 100 samples.



Performance of Sample Test

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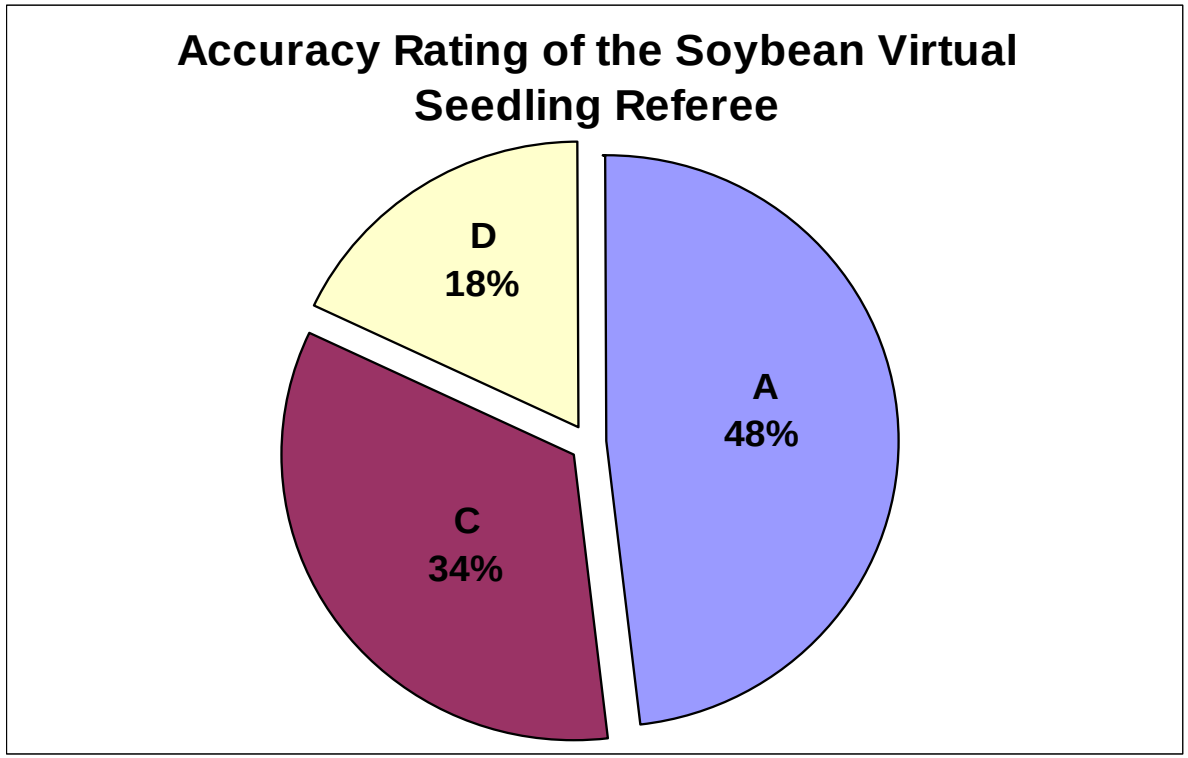
Accuracy rating:

A: >90

B: 85-89%

C: 80-84%

D: <80%



Note: Seedling 4 was not included in the rating

Summary

Soybean Seedling Evaluation Referee

- Rule clarifications may help improve uniformity in seedling evaluation of Soybeans.
- Rule harmonization of M&P with AOSA; choosing the best seedling descriptions from each, could improve uniformity and accuracy of Soybean seedling classification.
- Training and rule amendment are necessary to achieve higher accuracy and uniformity in the seedling evaluation of soybean.
- Experience in Soybean seedling evaluation improves proficiency but experience doesn't guarantee accurate results.

Update - 2010 corn seedling referee

Soybean Seedling Evaluation Referee

- Conclusion:
  - The difference in the seedling evaluation rules (M&P and AOSA) did consistently result in seedling classification differences.
  - The M&P 2011 version will include an amendment to harmonize the corn seedling evaluation rules with the AOSA corn seedling evaluation rules.

Acknowledgments

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Grateful to

- SSTS staff:

  Brenda Baergen, Leanne Duncan

- Image provider:

  SSTS

  Van Zelst, Mary Ellen

  Pioneer Hi-Bred Production Ltd. Seed Lab, Chatham, Canada

- For facilitating for referee delivery:

  Frank Lewis (CSAAC) and Anita Hall (AOSA)