

2012 Region 2 Referee: Borderline Corn & Soybean Seedlings

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Background

- There have been five previous virtual seedling referees in this series: three corn and two soybean.
- Besides classifying seedlings, information has been gathered on substrates, experience level of participants, and opinions on what should be in the revision of volume 4 of the AOSA Rules (formerly the Seedling Evaluation Manual).
- The referees have been primarily composed of scans of seedlings. During the first year drawings were included.
- Very few seedlings have been classified by all participants as normal or abnormal. The majority of seedlings have been in the roughly 80-95% or 10-30% range.
- A significant number were in the 45-55% range. **Who decides the official designation of 'iffy' seedlings?**
- It would be useful to expand Volume 4 to include more iffy seedlings (that have been designated normal or abnormal).
- Most seedlings in this referee were used in previous virtual referees and were classified as normal (and abnormal) by about 50% of respondents.

Instructions Presented to Participants

- Please examine the following 12 images of corn and 14 images of soybeans and list how they should be classified using Volume 4 of the AOSA Rules for Testing Seeds.
- In the second column (if you wish) list how you think the seedlings should be classified based on experience, etc.. This is NOT to advocate for not following the Rules, but rather to find out if you agree with what is classified in Volume 4 as abnormal.
- In the third column explain why you classified the seedlings as you did in columns one and two.
- Return completed form to mgstahr@iastate.edu or 515-294-2014 (FAX).
- Results are due by May 4th so that hopefully results can be released on the AOSA and SCST web sites before the annual meeting. Credit will be given for participation.



Corn #1

AOSA normal: 40%
Analyst normal: 42%

Mike's call: **Abnormal.**
Coleoptile split more than 1/3. Leaf not emerged.



Corn # 2

AOSA normal: 48%
Analyst normal: 54%

Mike's call: **Abnormal.**
Coleoptile split more than 1/3. Leaf not emerged.



Corn #3

AOSA normal: 56%

Analyst normal: 77%

Mike's call: **Abnormal**. First leaf is badly damaged (even though next two leaves are fine). Three leaves are not typical in a germ test, but same situation would exist for two leaves. **If I had a choice the seedling would be normal.**



Corn # 4

AOSA normal: 51%

Analyst normal: 58%

Mike's call: **Iffy Normal**. If this wasn't a virtual seedling I would apply pressure to the shoot and if it broke off with minimal pressure the seedling would be abnormal.

2011: 65% normal



Corn #5

AOSA normal: 33%
Analyst normal: 27%

Mike's call: **Abnormal.**

Lesion along interior of coil
and coleoptile split from
the tip. Leaf hasn't
emerged.

Corn #6

AOSA normal: 4%
Analyst normal: 6%

Mike's call: **Abnormal.**

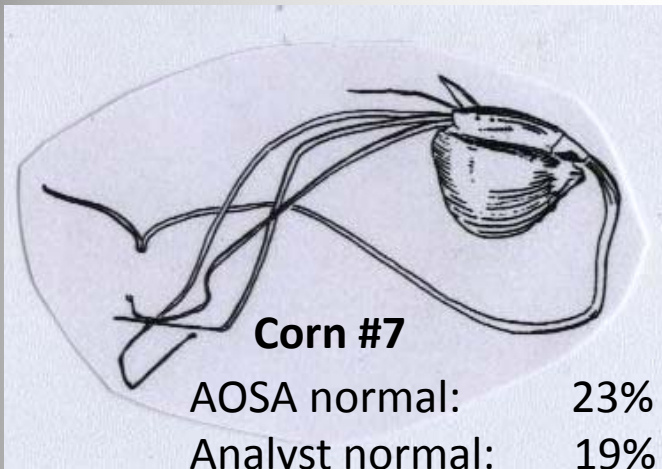
First leaf badly split.

2006: 64%

2008: 4%

2011: 15%





Corn #7
AOSA normal: 23%
Analyst normal: 19%

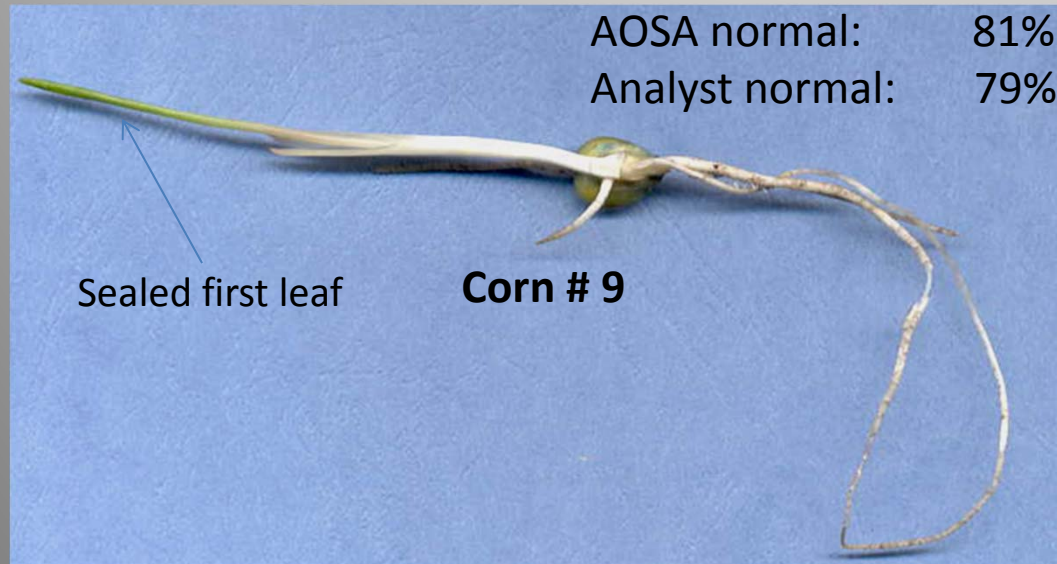
Mike's call: **Iffy Normal.** See seedling #4.

AOSA normal:
Analyst normal:

13% **Corn #8**
13%



Mike's call: **Abnormal.** Insufficient roots.

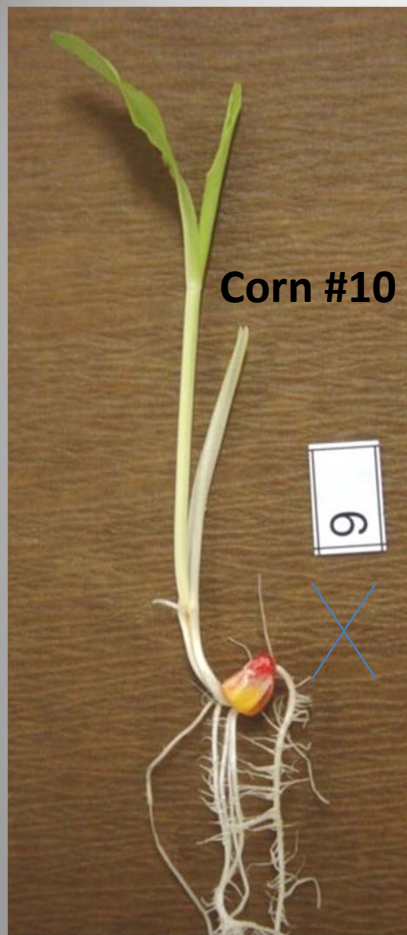


AOSA normal: 81%
Analyst normal: 79%

Sealed first leaf

Corn # 9

Mike's call: **Normal.** Sealed first leaf is not covered in volume 4. Adequate leaves and roots.



2007:64%
2008:75%
2011:77%

Corn #10

AOSA normal: 49%
Analyst normal: 49%

Mike's call: **Normal.**
Coleoptile split more than 1/3, but leaves are undamaged.



Similar 2008: 44%
2011:60%

Corn #11

AOSA normal: 47%
Analyst normal: 47%

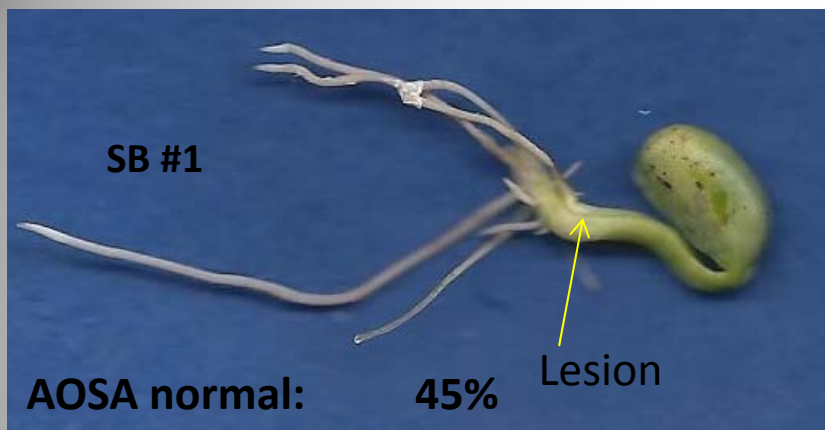
Mike's call: **Normal (AOSA), Abnormal (ISTA).** Not in AOSA. Good roots & shoot. But has fused mesocotyl/coleoptile. Similar in 2008:44%, 2011:60%



Corn #12

AOSA normal: 98%
Analyst normal: 98%

Mike's call: **Normal.** Leaf more than halfway up coleoptile.



SB #1
 AOSA normal: 45%
 Analyst normal: 45%

Mike's call: ~**Normal**. Superficial lesion, but reduced hypocotyl length. 2011:51%

AOSA normal: 85%
 Analyst normal: 87%

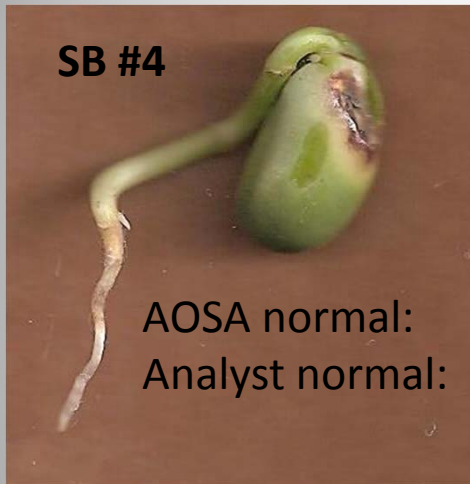


SB #2
Mike's call: **Abnormal**. Good roots (notice CCP). Markedly short and thickened hypocotyl. Epicotyl has emerged. 2011: 63%



SB #3
 AOSA normal: 28%
 Analyst normal: 28%

Mike's call: **Abnormal**. Insufficient roots. Short, damaged hypocotyls.



SB #4

AOSA normal: 24%
Analyst normal: 30%

Mike's call: **Abnormal.** Insufficient roots. Possible problem with epicotyl.



SB #5

AOSA normal: 70%
Analyst normal: 68%

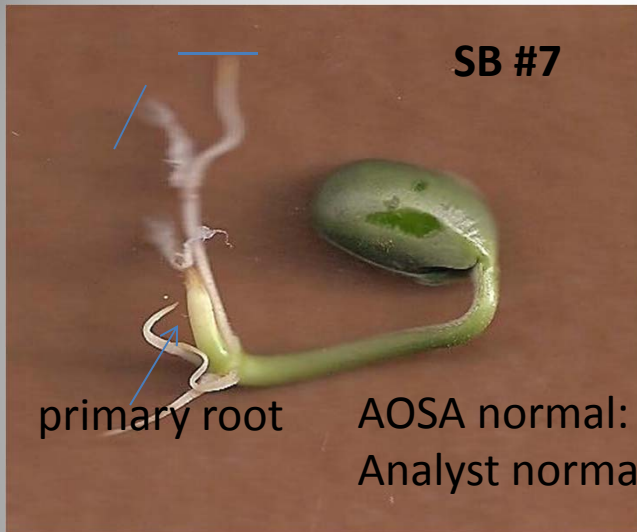
Mike's call: **Abnormal.** Good roots. Hypocotyl curling due to lesion (damage into central conducting tissue).



SB #6

AOSA normal: 63%
Analyst normal: 61%

Mike's call: **Abnormal.** Adequate roots. Short hypocotyl.

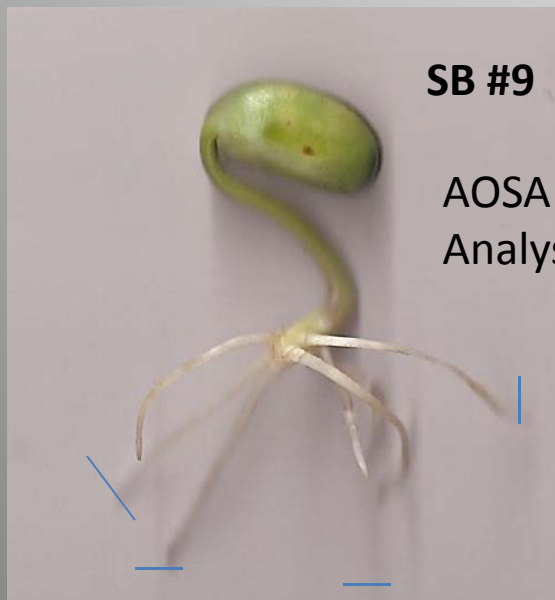


SB #7

primary root

AOSA normal: 53%
Analyst normal: 51%

Mike's call: **Abnormal.** Stubby primary root. Questionable roots.



SB #9

AOSA normal: 94%
Analyst normal: 92%

Mike's call: **Normal.**



SB #8

AOSA normal: 43%
Analyst normal: 45%

Mike's call: **Abnormal.** Adequate roots, but roots wrapped around base of hypocotyl. Marginal hypocotyl length.



AOSA normal: 54%
Analyst normal: 54%

Mike's call: **Abnormal.** Adequate roots. Hypocotyl short and thickened.



AOSA normal: 87%
Analyst normal: 87%

Mike's call: **Normal.** Adequate roots. Adventitious roots indicate point of injury. Adequate hypocotyl length.

SB #12



Mike's call: **Normal.** Sufficient roots to anchor seedling if grown in sand.
2011: 97%

AOSA normal: 98%
Analyst normal: 98%

Mike's call: ~**Normal.**

Adequate roots. Adventitious roots indicate point of injury. Primary leaves have emerged and hypocotyl is somewhat shortened and thickened.
2011: 89%

SB #13



AOSA normal: 96%
Analyst normal: 96%

SB #14



AOSA normal: 89%
Analyst normal: 89%

Mike's call: **Normal.**

Thanks to all that participated!

- 46 participants from 20 labs in the U.S. and Canada.
- Four AOSA labs, two Canadian, 14 SCST.
- Results from Seed Issues Forum will be added to those in this presentation.
- Results and suggestions will be forwarded to Germination Committee and authors of Seedling Evaluation Handbook (may later become volume 4) which is being put together.

Some noteworthy comments and suggestions:

- Specify what “emerged” refers to as to where a leaf exits the coleoptile in corn. Although the assumption is the tip of the coleoptile, this is not indicated in volume 4.
- Specify what “emerged” means in regard to how much of a leaf needs to emerge to be considered as having emerged. That is although technically 1/32” is emergence, how much of the leaf has to emerge to assess how badly split it is (if any).