2017-18 FLOWER SEED GERMINATION REFEREE RESULTS

REGION IV SOUTHWEST

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Background

- The final counts for many flower seed species are considerably earlier for AOSA than they are for ISTA.
- Some flower seed species do not appear to reach the maximum potential given the final count days listed in AOSA.
- The coordinators of this referee compared AOSA and ISTA Rules for 17 species of flower seeds.
- After review, we decided to start with three species: China-aster, carnation, and celosia. These three species have common germination temperature and media requirements for AOSA and ISTA and differ only in the number of days for the final count.

Background, cont.

- A call for referee participants was sent out to all AOSA and SCST members.

- Potential participants were asked to fill out a survey with the following questions:

1. How many years' experience do you have in seed testing?

2. Do you have white blotters to use as germination media in your laboratory?

3. How many samples of the following species do you evaluate for germination each year?

   a. *Callistephus chinensis* (China-aster) ___
   b. *Dianthus carophyllus* (Carnation) ___
   c. *Celosia argentea* (Celosia) ___

Background, cont.

- Survey results are summarized below:

1. How many years' experience do you have in seed testing?

   Ranged from 5 years to 36 years; average of **22+ years' experience**

2. Do you have white blotters to use as germination media in your laboratory?

   5 laboratories said "no," so **white blotters were provided to all participating labs**

3. How many samples of the following species do you evaluate for germination each year?

   a. *Callistephus chinensis* (China-aster) Ranged from 0 to 180; average **23 samples**

   b. *Dianthus carophyllus* (Carnation) Ranged from 0 to 35; average **7 samples**

   c. *Celosia argentea* (Celosia) Ranged from 0 to 150; average **24 samples**

Purpose of referee

- To compare the AOSA and ISTA final counts of three flower seed species.
- Results could be used for AOSA Rules change proposals.
- One possible outcome would be to harmonize the ISTA and AOSA rules for germination testing on these species.

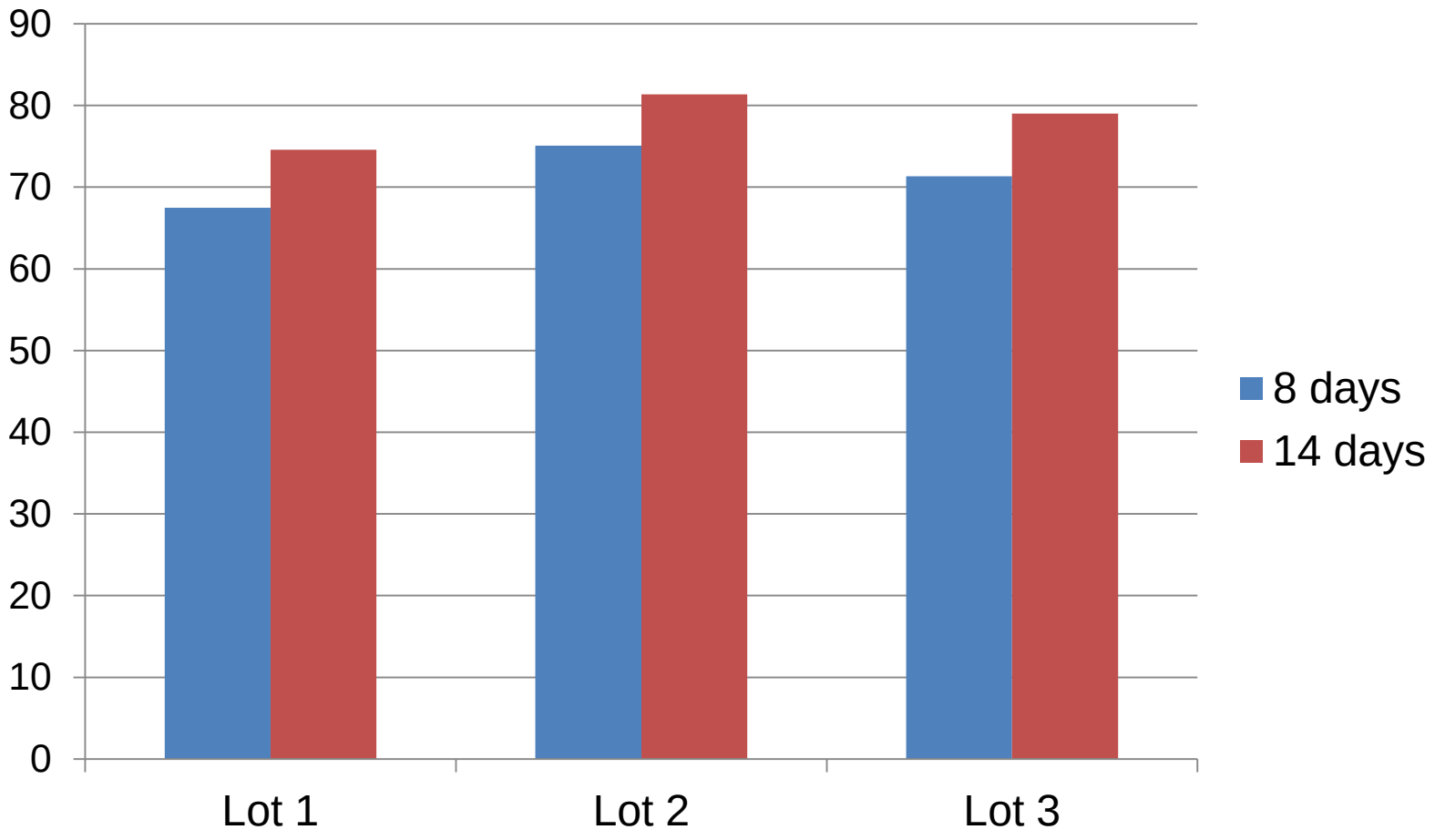
Materials and Methods

- Three flower seed species were selected for comparison of AOSA and ISTA Rules: China-aster (*Callistephus chinensis*), carnation (*Dianthus caryophyllus*) and celosia (*Celosia argentea*).
- Three lots of each species from Sakata Seed Company were selected, of varying quality.
- Samples from the nine lots were prepared and sent out to ten laboratories from six different states and one Canadian lab.
- Participants were asked to test each sample using 4 replicates of 100 seeds, using only white blotters (provided) at 20°C for China-aster and carnation, and at 20-30°C for celosia.
- Participants were asked to do an 8 day count as they would for the AOSA final count and to extend the test for six more days and report the 14 day final count for ISTA.

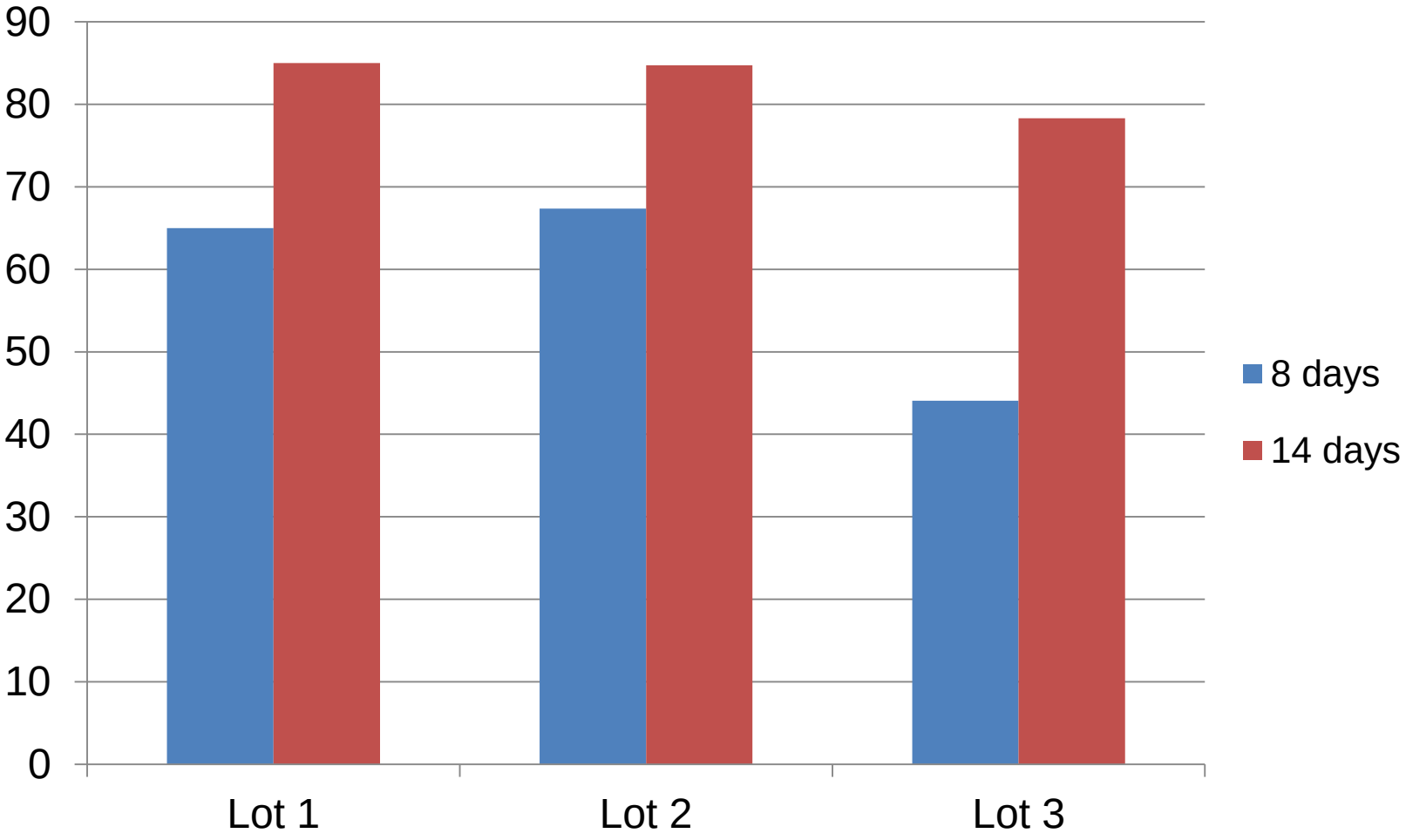
Results

- All 10 labs reported results.
- Due to some packaging and shipping issues, a few of the samples were slightly short of 400 seeds; results were adjusted accordingly.
- Results are shown on the following slides.

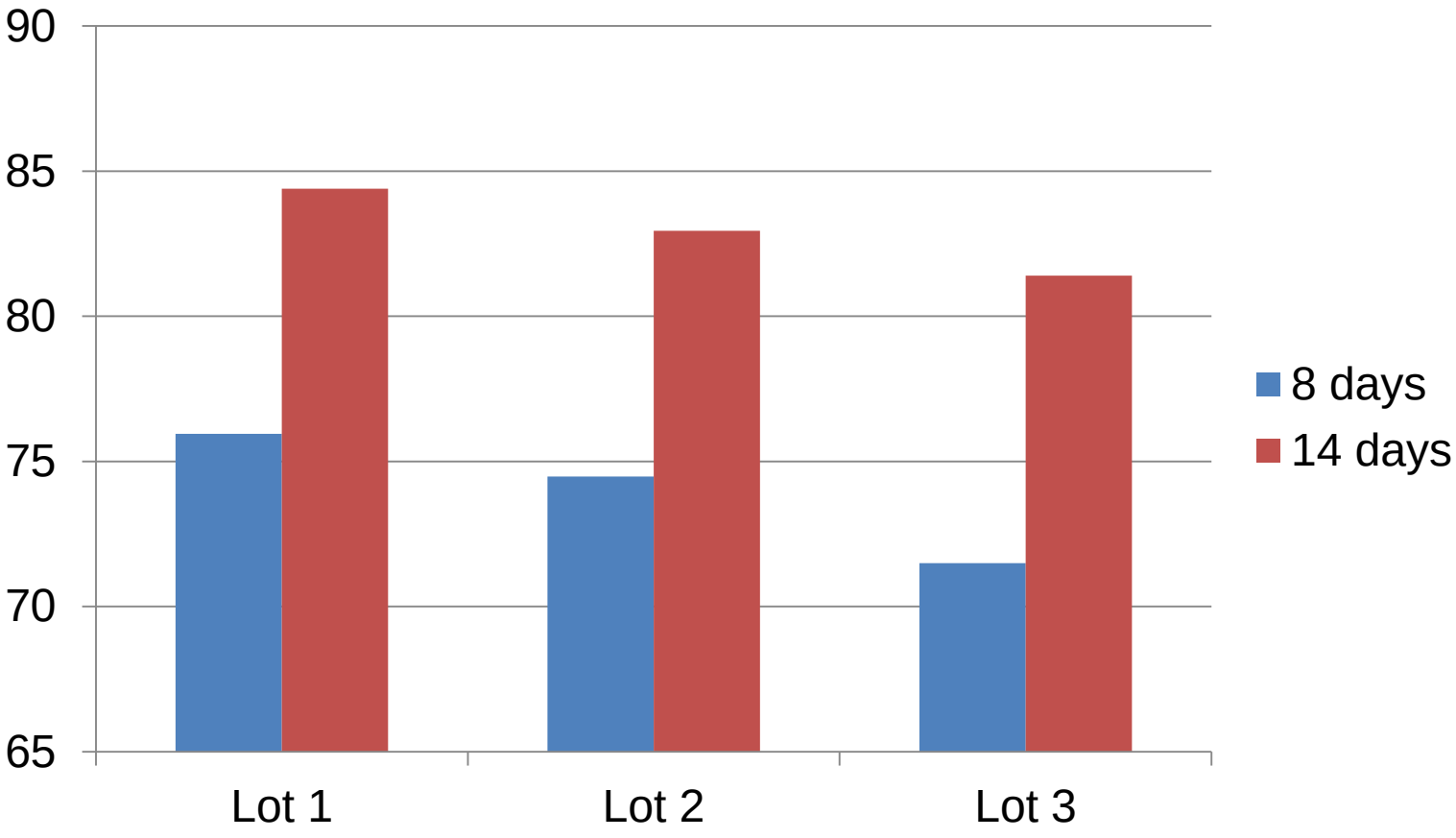
Summary of results: China-Aster Percent germination on 8 vs. 14 days



Summary of results: Carnation
Percent germination on 8 vs. 14 days



Summary of results: Celosia
Percent germination on 8 vs. 14 days



Results, cont.

Species	Average germination over 9 lots and 10 labs		
	8 days	**14 days**	Difference
China-aster	71.3%	78.3%	**7.0%**
Carnation	58.8%	82.7%	**23.9%**
Celosia	74.0%	82.9%	**8.9%**

Discussion

- For China-aster, the additional 6 days in test yielded an average 7% increase in germination.
- For Celosia, the increase was almost 9%.
- For Carnation, the additional germination with 6 additional days in test was nearly 24%.
- The evidence supports the idea of harmonizing with ISTA in using the 14 day final count for all three species tested.

Discussion, cont.

- Additional statistical analysis will be conducted on the data, and AOSA Rules change proposals will be submitted in the next year.

Callistephus chinensis
China-aster

Dianthus caryophyllus
Carnation

Celosia argentea
Celosia

Thanks to participating laboratories

- Eurofins BioDiagnostics
- Incotec
- Indiana State Seed Lab
- Louisiana Dept. of Ag and Forestry
- Montana State Seed Lab
- Ransom Seed Lab
- Sakata Seed Company
- SGS Brookings
- Wyoming Seed Lab
- 20/20 Seed Labs

Special thanks to Sakata Seed Company for providing and preparing the samples.

Questions?

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