



**Effect of storage conditions on seed  
viability and vigor of fine fescue**

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# Objective

Determine the effect of storing  
**coated and non-coated** creeping and  
chewing fescues in three  
environments for two years on seed  
viability and vigor



## **Expected outcome**

**The outcome will enable us to explain the deterioration (if any) in seed quality of coated vs. non-coated seeds of these two important turf species over a period of two years.**

# Rationale

- **Creeping and chewing fescue are important cool season turf grasses in the US.**
- **With the slow moving of grasses from warehouses and home improvement stores, stop sales and difficulty in identifying the true value of the stored seeds has become a problem.**
- **The proposed study will provide information about the extent of deterioration of fine fescues in storage under different warehouse and other environments over a two-year period.**
- **This study will also shed light on how to monitor seed quality of fine fescue in storage and identify the proper safe storage conditions for two years.**

## *Rationale*

- ✧ **No published reports are available on the potential storability of coated and non coated seed of fine fescues.**
- ✧ **The methodology that would be developed in this study can be used in similar studies in the future for other crops.**

# Materials and Methods

## Seed Materials

- ✧ 2010 crops.
- ✧ Two creeping red and two chewing fescue varieties representing different initial qualities have been used.
- ✧ Coated seeds and non-coated seed lots.

## Length of the study

- ✧ Two years, with testing conducted each 6-month interval
- ✧ Testing takes place in:
  - ✧ April 2011 (initial testing)
  - ✧ Oct 2011
  - ✧ April 2012
  - ✧ Oct 2012

**Five Labs are participating in the study.**

# Materials and Methods

## Types of tests to be conducted in 6-month intervals

- ✧ Seed moisture content (according to AOSA Moisture determination Handbook No. 40).
- ✧ TZ test (according to AOSA Tetrazolium Handbook).
- ✧ Standard germination test (according to AOSA Rules for Testing Seeds 2010).
- ✧ Accelerating aging test (according to AOSA Seed Vigor Testing Handbook, 2009).
- ✧ Cold test (according to AOSA Seed Vigor Testing Handbook, 2009).
- ✧ Speed of germination Index.

# Materials and Methods

## Storage conditions

- ✧ Normal warehouse conditions in SW MO.
- ✧ Garden Center at home improvement store, Springfield, MO.
- ✧ Constant 10C.

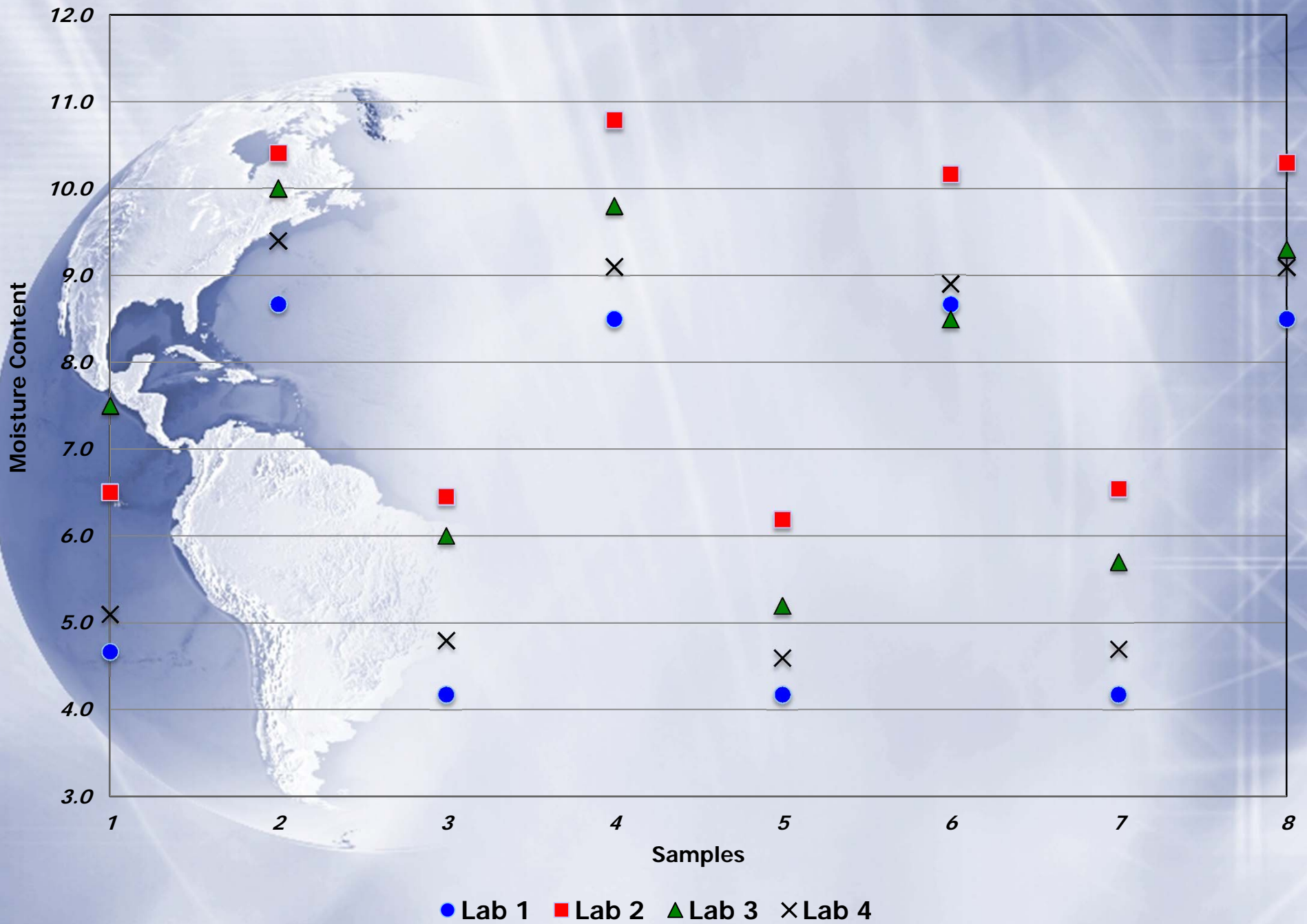
Temperature and relative humidity data will be collected monthly in each storage site.



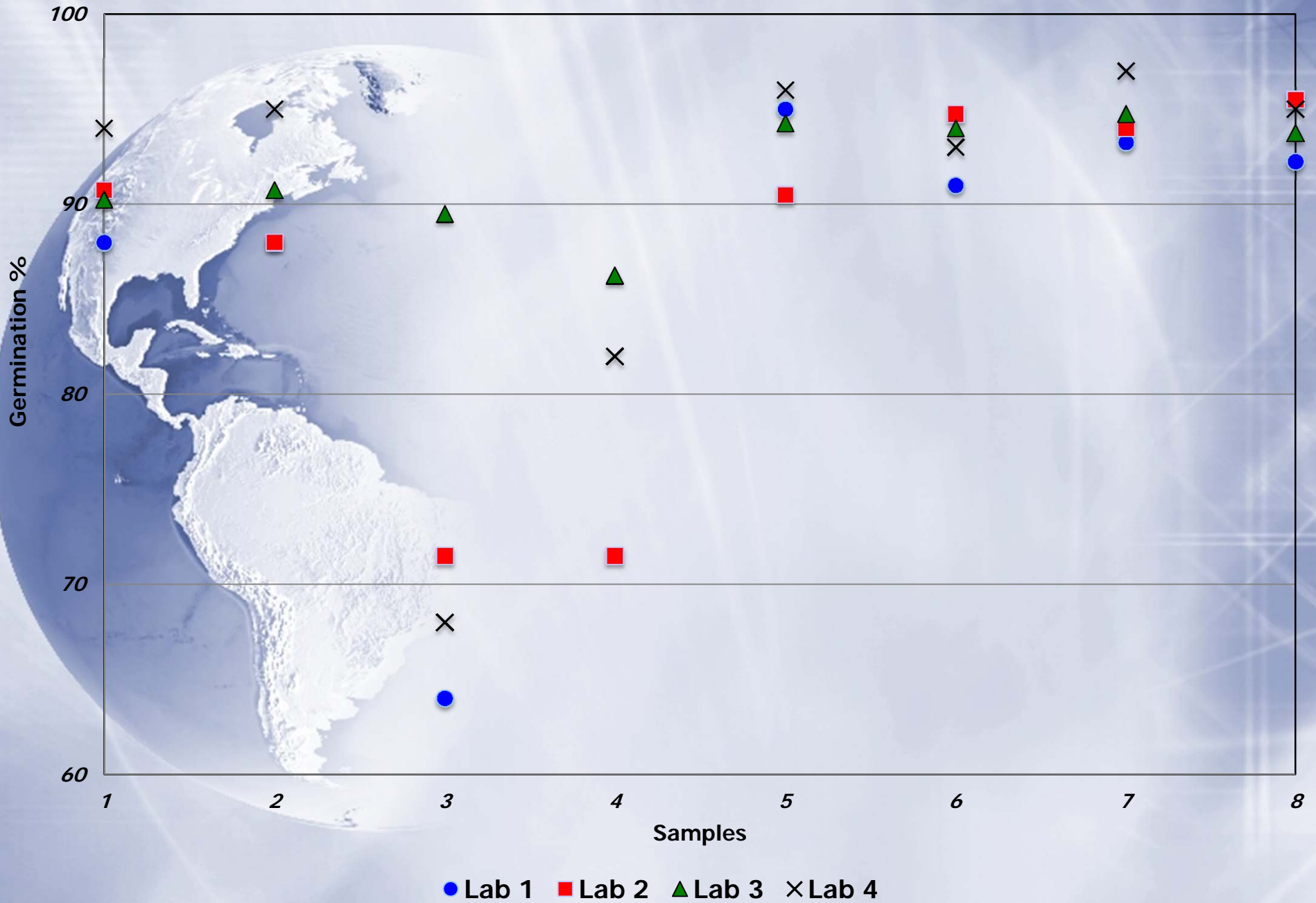
## Referee

- ✧ **A full study protocol were sent to participant labs.**
- ✧ **Five labs are participating. Not all labs are conducting AAT.**
- ✧ **Seeds were coated in Summit Inc, Idaho.**
- ✧ **Samples for all labs are prepared in Pennington seed lab, MO.**
- ✧ **Data will be collected and analyzed at OSU seed lab.**

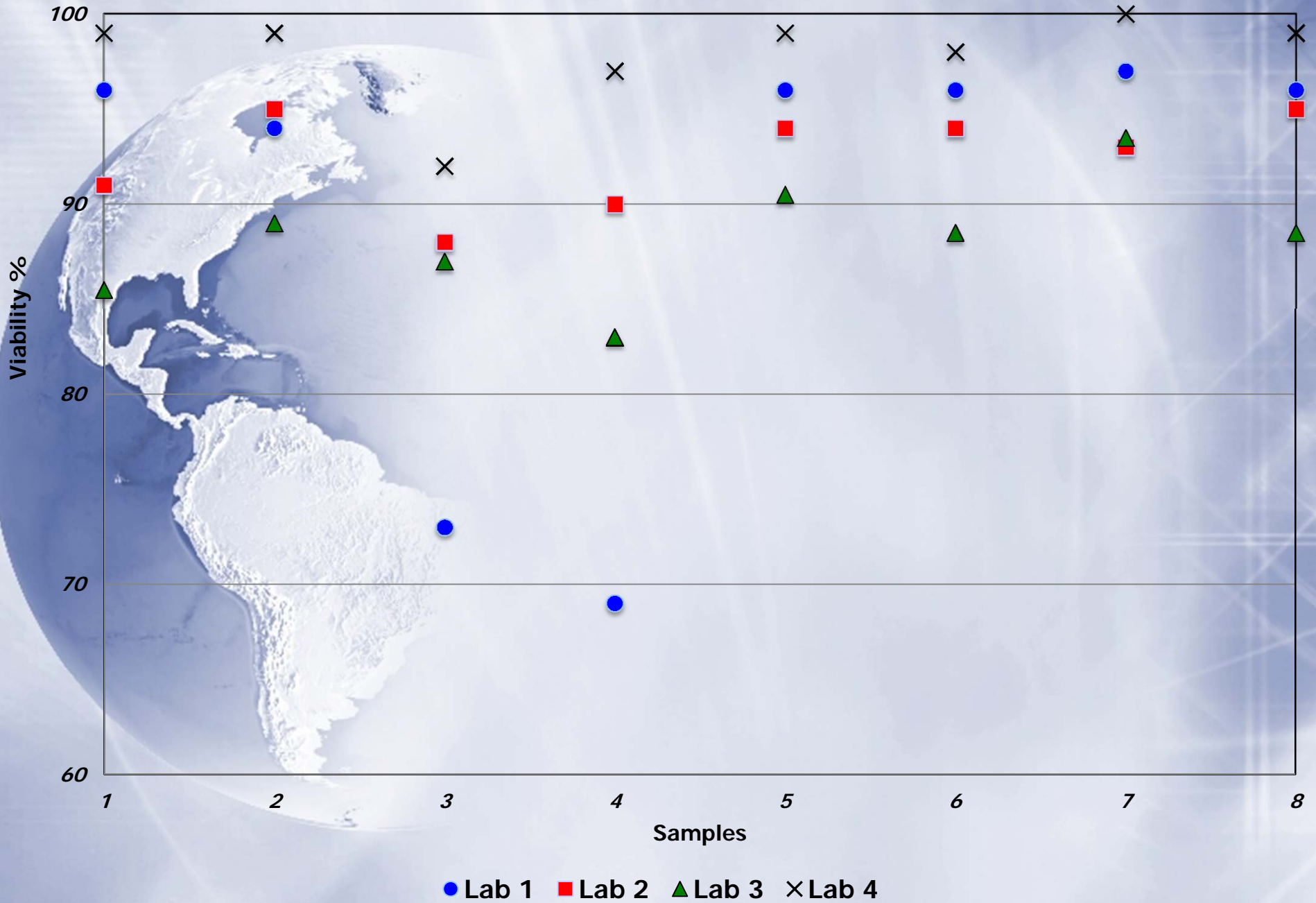
Seed Moisture Test Results of Four Coated and Uncoated Fine Fescue Seed Lots April 2011



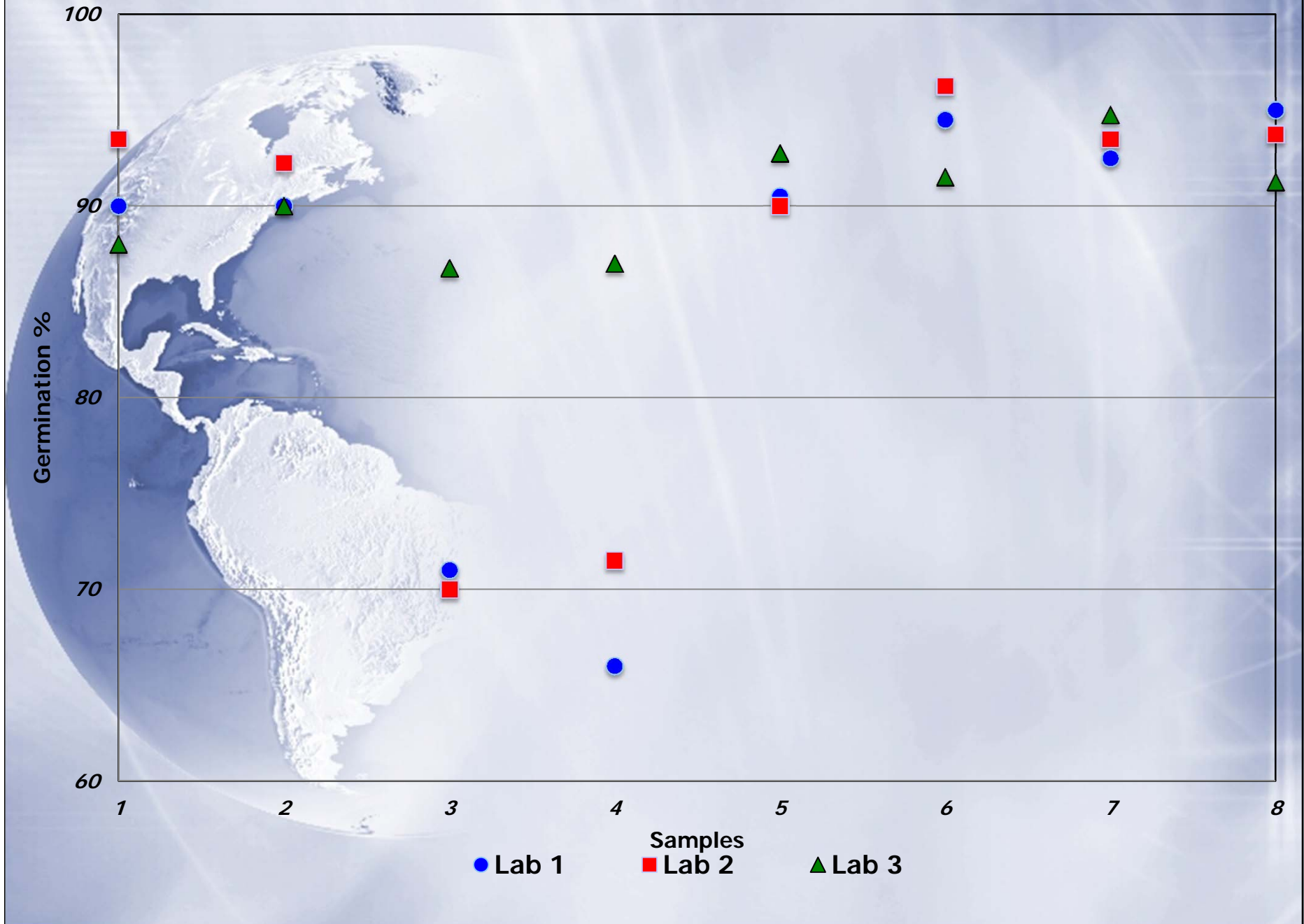
Standard Germination Test Results of Four Coated and Uncoated Fine Fescue Seed Lots Tested in Four Laboratories in April 2011, Germinated at 15-25C for 21d.



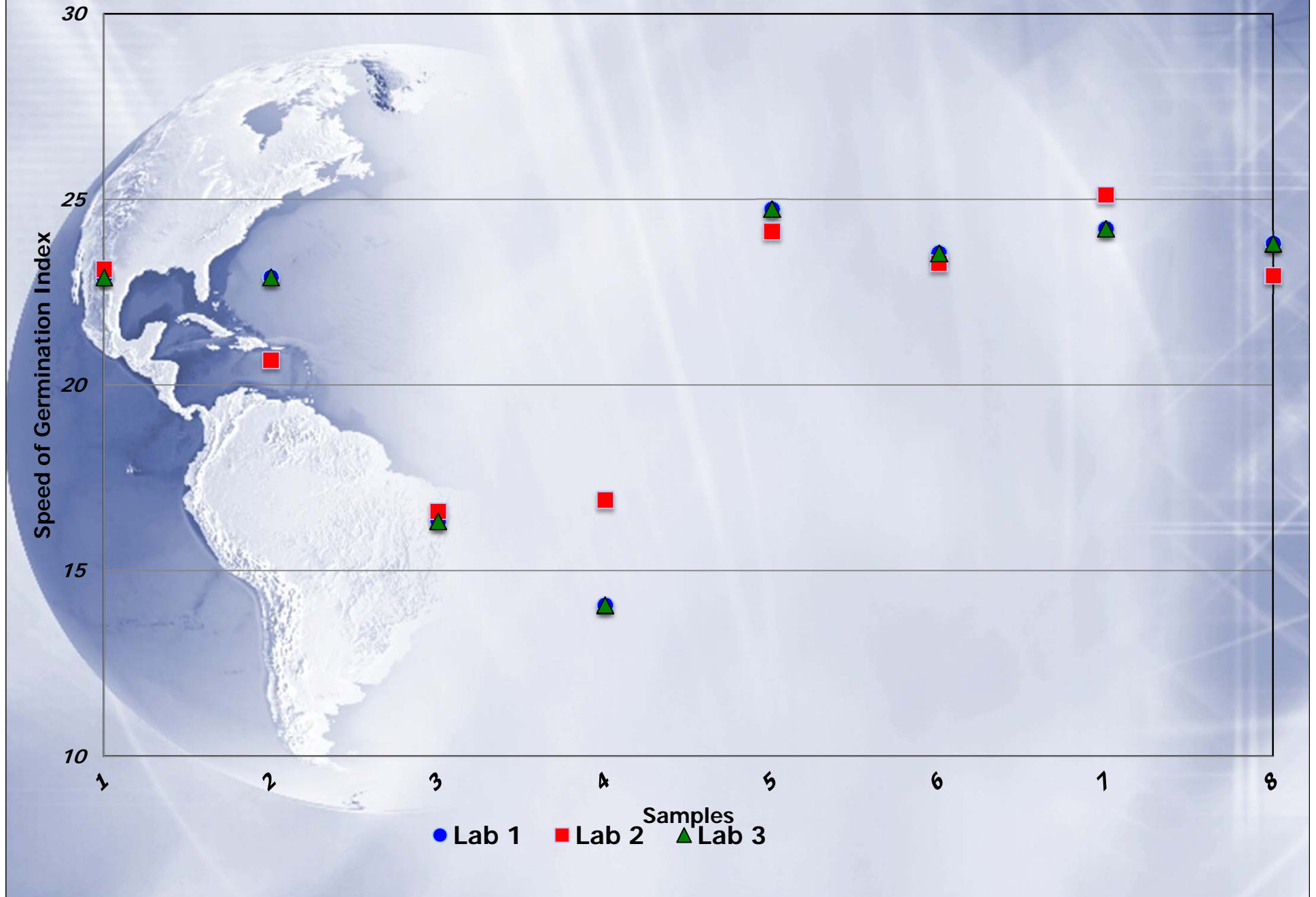
Tetrazolium Test Results of Four Coated and Uncoated Fine Fescue Seed Lots Tested at Four Laboratories in April 2011.



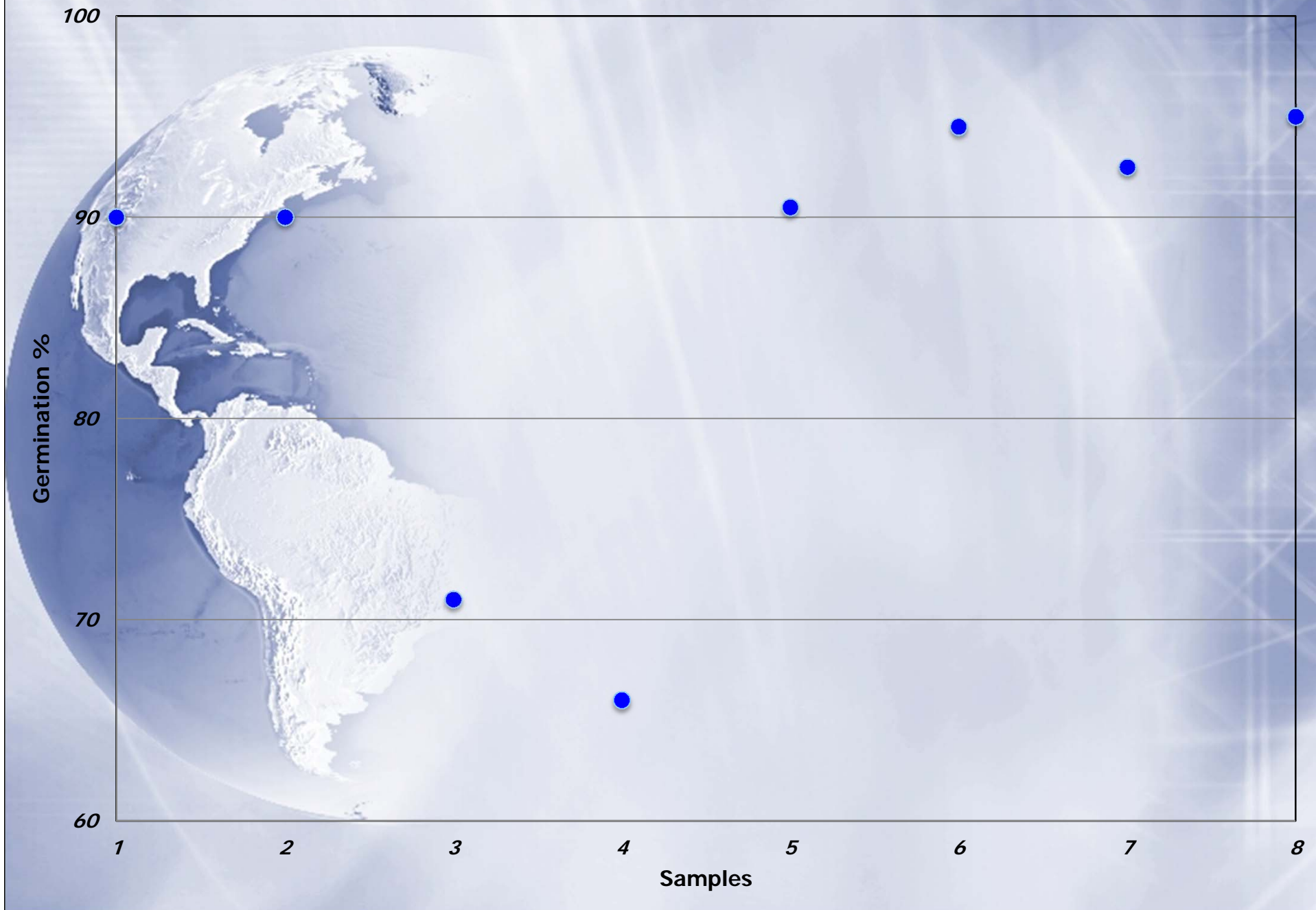
Mean Germination of Cold Test of Four Coated and Uncoated Fine Fescue Seed Lots (April 2011) Exposed to 5C for 7d, then Germinated at 15-25C for 14d



Speed of Germination Index of Four Coated and Uncoated Fine Fescue Seed Lots Tested in Three Laboratories in April 2011



Germination of Accelerated Aging Test of Four Coated and Uncoated Fine Fescue Seed Lots (April 2011) Exposed to 41C for 72h, then Germinated at 15-25C for 14d



# Summary

- ✧ **Design the study.**
- ✧ **Choose seed lots.**
- ✧ **Identify warehouse and other storage environment.**
- ✧ **Implement the study.**
- ✧ **Collect observations.**
- ✧ **Analyze data.**
- ✧ **Publish the results.**



# References

- ✧ AOSA. 2010. Rules for Testing Seeds. Association of Official Seed Analysts. Ithaca, NY.
- ✧ AOSA. 2009. Seed Vigor Testing Handbook. Contr. No. 32. Association of Official Seed Analysts. Ithaca, NY.
- ✧ AOSA. 2007. Seed Moisture Testing Handbook. Contr. No. 40. Association of Official Seed Analysts. Ithaca, NY.
- ✧ AOSA. 2000. Tetrazlium Testing Handbook. Association of Official Seed Analysts. Ithaca, NY.
- ✧ Elias, S.G., A.E. Garay, W.C. Young, and T.G. Chastain. 2007. Maintaining Optimum Seed Quality in Storage-Storing grass seeds in Oregon. *In* W. C. Young III (ed.), *Seed Production Research at Oregon State University*. Department of Crop and Soil Science Ext/Crs 126, 4/07.
- ✧ Elias, S. G. and L. O. Copeland 1994. The effect of storage conditions on canola seed quality. *J. Seed Technol.* 18(1): 21-29.