Managing Fusarium Seed Piece Decay and Dry Rot in Storage

Jeff Miller and Terry Miller

Miller Research

Fusarium sambucinum symptoms

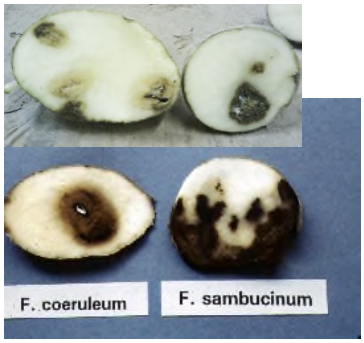
Fusarium coeruleum symptoms

Fusarium graminearum

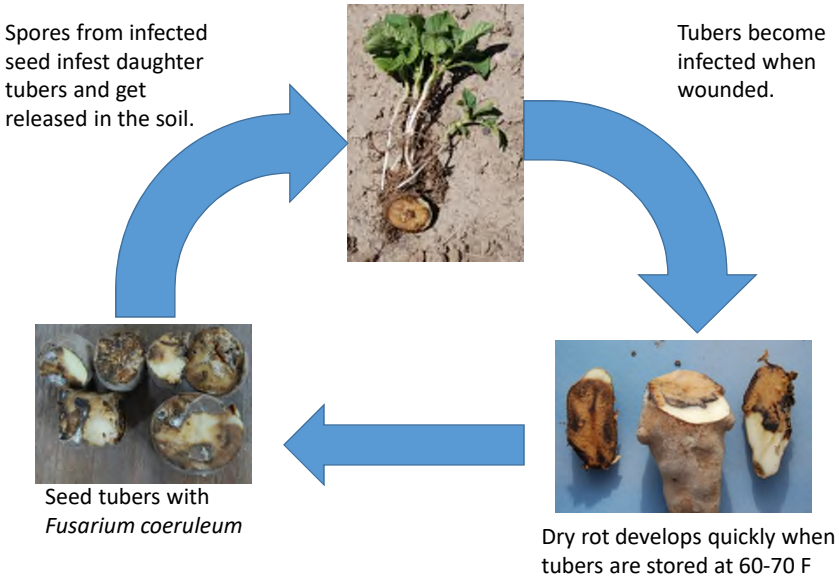
Photos courtesy of Dr. Gary Secor, NDSU

Does it matter which Fusarium I see?

- *F. sambucinum* predominates in storage.
  - Resistant to benzimidazole fungicides (e.g. TBZ, Tops, Mertect).
  - Resistance to fludioxonil reported in other areas of US and Canada.
  - Grows faster than *F. coeruleum*.
  - More problematic with pre-cut seed.
- *F. coeruleum* can be more damaging in the field
  - More problematic with fresh cut/planted seed.
  - Grows faster than *F. sambucinum* in soil.
  - Fungicide resistance has not been observed.
  - Not common in storage.



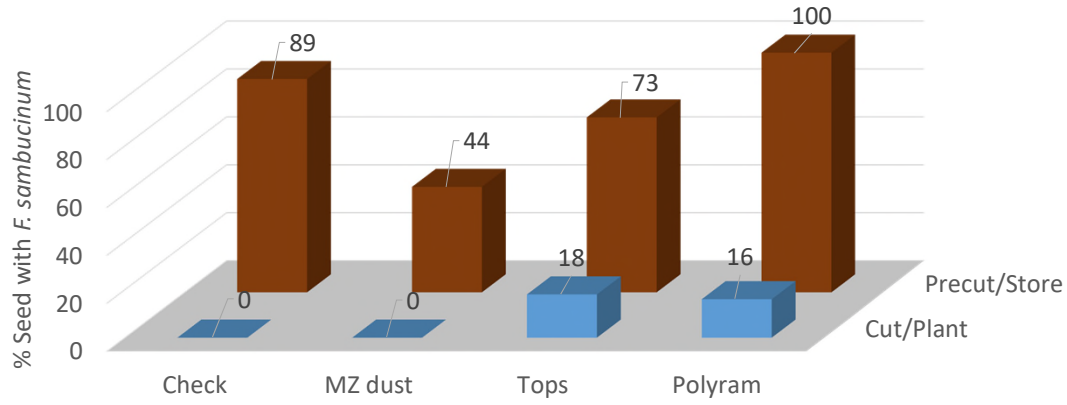
Fusarium Dry Rot/Seed Piece Decay Disease Cycle



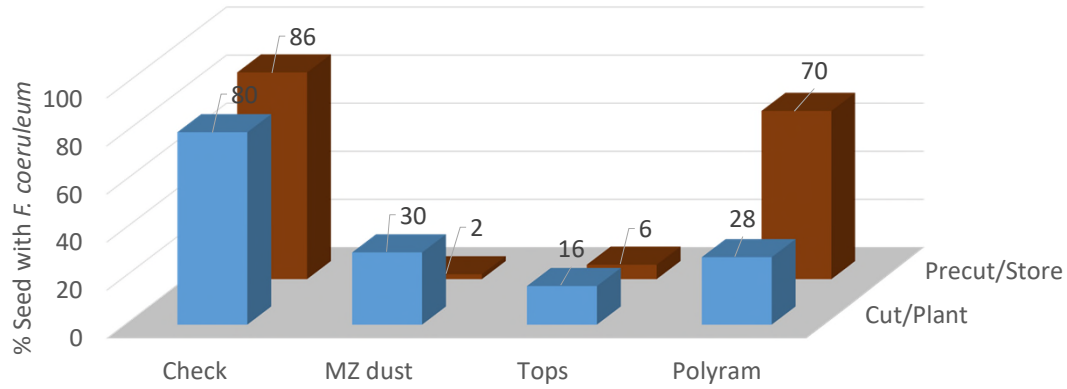
So what do I do to prevent seed piece decay and dry rot in storage?

1. Purchase seed with as little dry rot as possible.
2. Sterilize seed cutting equipment.
3. Sharpen seed cutting knives.
4. Avoid pre-cutting, if possible
5. Treat with an effective seed treatment.
6. Minimize wounding at harvest.
7. Post-harvest treatment with Stadium (?)

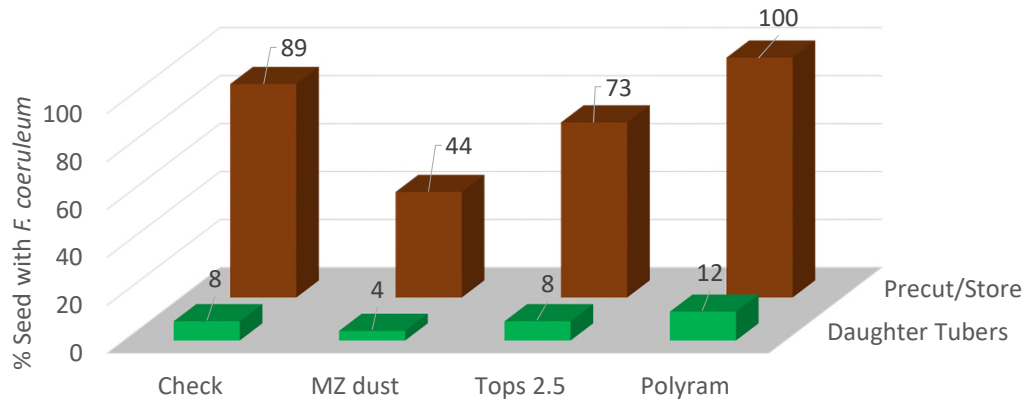
Risk of Precut vs. Cut/Plant – *F. sambucinum*



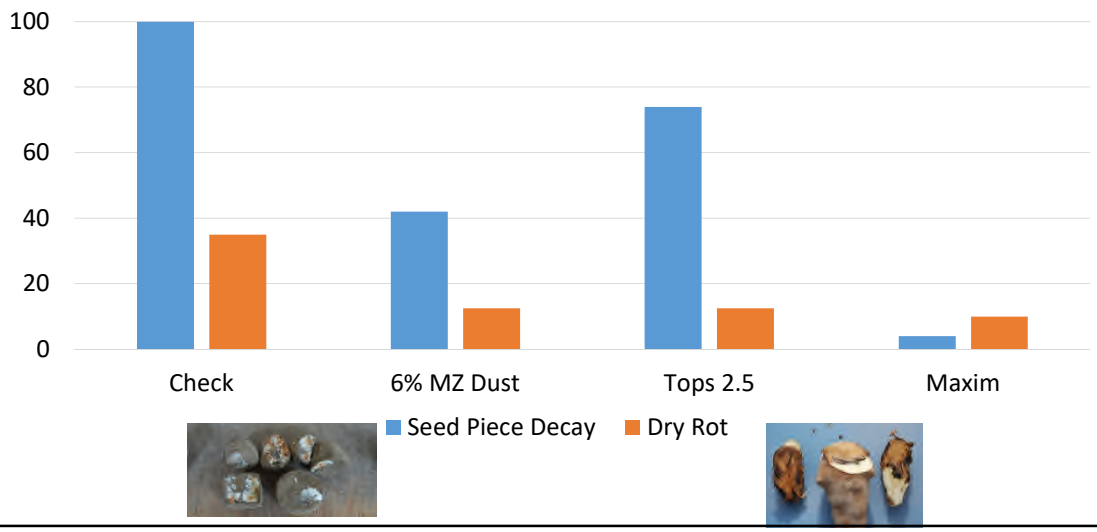
Risk of Precut vs. Cut/Plant – *F. coeruleum*



Precut Seed and Harvested Tubers – *F. coeruleum*



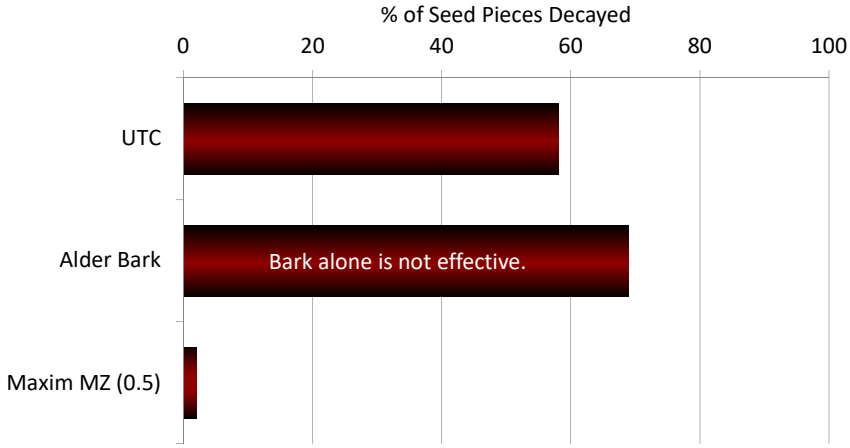
Relationship between seed piece decay and dry rot



Which seed treatment do I use?

- Mancozeb dust
- Fludioxonil
  - E.g. Maxim/CruiserMaxx Potato, Spirato
- Difenoconazole
  - CruiserMaxx Potato Extreme
- Prothioconazole
  - Emesto Silver

Effect of Seed Treatments on Fusarium Seed Piece Decay



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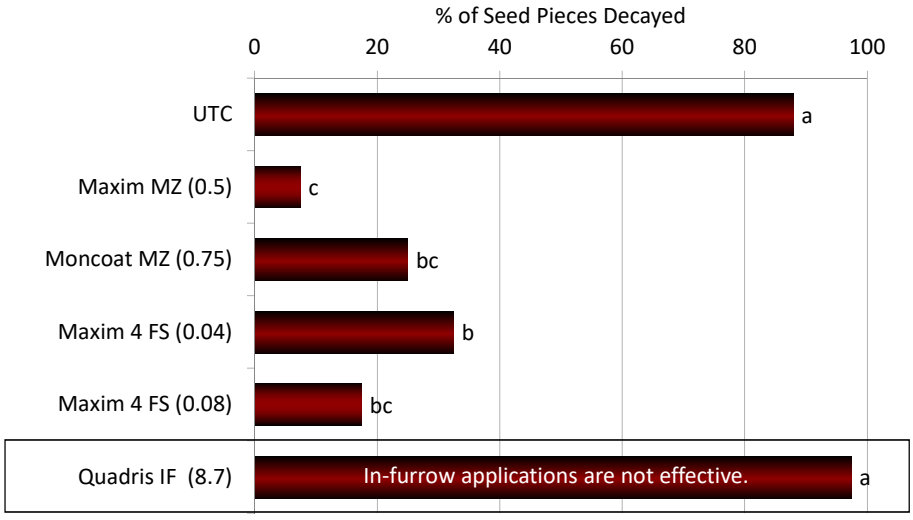
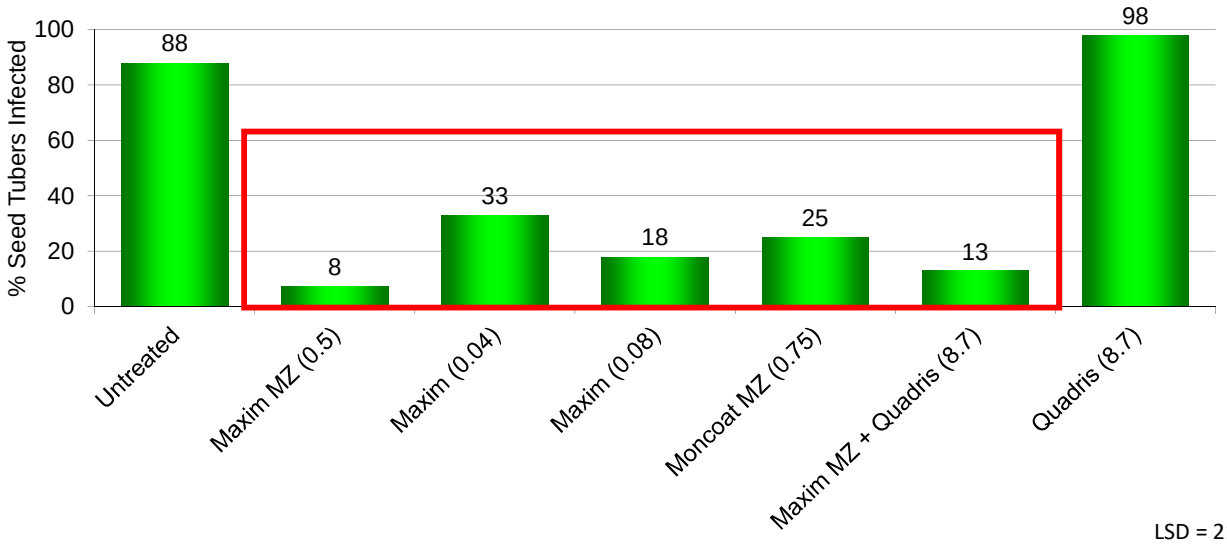


Fusarium Seed Piece Decay



LSD = 21

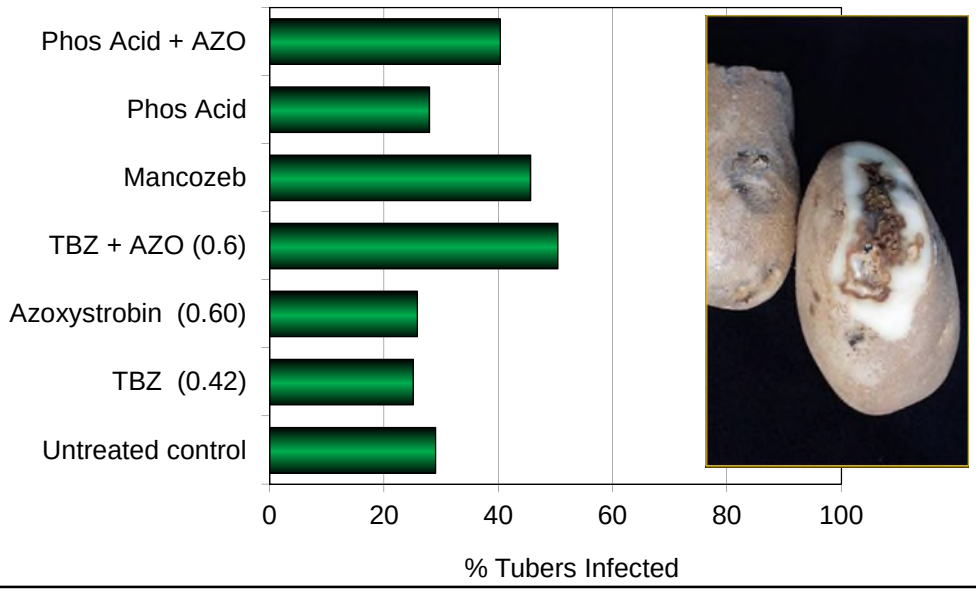
Seed Treatments Summary

1. In general, seed treatment products combined with mancozeb protect best against Fusarium seed decay.

2. In-furrow fungicide applications do not control Fusarium seed decay.

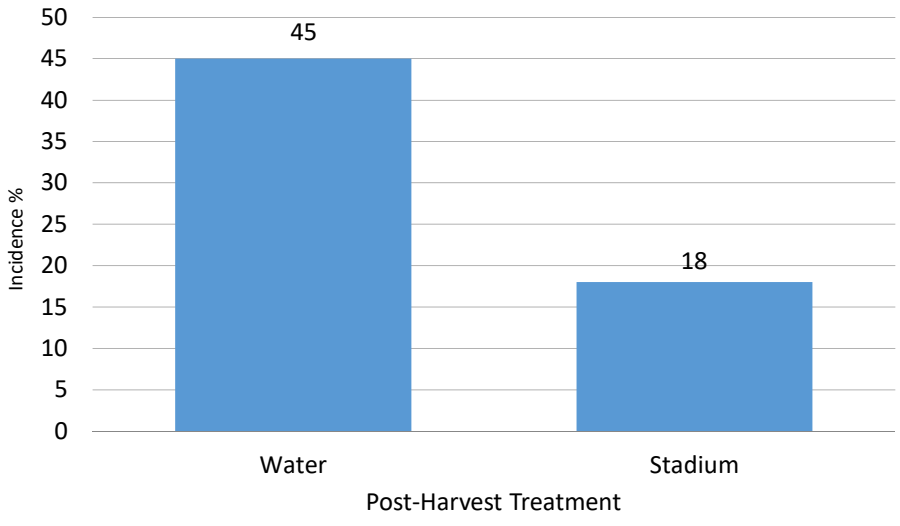
3. Desire to move away from dust for worker protection/safety issues.
   - Liquid seed treatments have been effective

Post-harvest Fungicides – Fusarium Dry Rot



Efficacy of Post Harvest Application on Dry Rot

Dr. Nora Olsen, University of Idaho



MRL issues need to be resolved.

Send us your rot!

- Kasia Duellman, 208-529-8376, kduellman@uidaho.edu
  - Species determination
  - Sensitivity to fungicide

References

- Peters et al., 2012. Distribution and management of fungicide-resistant Fusarium spp. infecting potato seed tubers in Canada. Phytopathology 102(7), Suppl. 4:92.
- Gachango et al., 2012. Fusarium spp. Causing Dry Rot of Seed Potato Tubers in Michigan and Their Sensitivity to Fungicides. Plant Disease 96:1767-1774.
- Miller Research reports to the Idaho Potato Commission. Available upon request.