

# Soft Rot SCRI Update

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# Activities

- Greenhouse study
  - Vacuum infiltration
  - Inoculated with *Dickeya dianthicola* and *Pectobacterium parmentieri*
  - Three varieties (mini-tubers): Atlantic; Lamoka and Snowden
- Field trials
  - Inoculated with *Dickeya dianthicola* and *Pectobacterium parmentieri*
  - Three varieties: Atlantic; Lamoka and Snowden
- Monitoring
  - Participated in ring testing
- Outreach



## Greenhouse Inoculation with Silwet and Tween20

1. Tubers soaked overnight.
2. Bacteria grown in NBY media for at least 48 h
3. Tubers placed into vacuum container.
4. Prepare inoculum (e.g. 600 nm of  $0.1=10^8$  cells mL<sup>-1</sup>) with 500 uL of Silwet or Tween 20 per 1 liter of bacteria.
5. Vacuum applied for 15 min then turn vacuum off and then leave tubers sit without vacuum for another 10 min (protocol was adapted from J. M. van der Wolf 2017 et al.)
6. Keep tubers at 4C for 10-14 days
7. Cut tubers after 10-14 days allow to suberize.
8. Seed pieces planted.



# Soft Rot Vacuum Infiltration Inoculation

1. Tubers need to be soaked overnight.
2. Bacteria grown in NBY media for at least 48 h
3. Tubers placed into vacuum container.
4. Prepare inoculum (e.g. 600 nm of  $0.1 = 10^8$  cells mL<sup>-1</sup>) with 500 uL of **Tween 20** per 1 liter of bacteria.
5. Vacuum applied for 15 min then turn vacuum off and then leave tubers sit without vacuum for another 10 min (protocol was adapted from J. M. van der Wolf 2017 et al.).
6. Keep tubers at 4C for 10-14 days.
7. Cut tubers after 10-14 days allow to suberize.
8. Seed pieces planted.



# Soft Rot Vacuum Infiltration Inoculation



# Inoculated Field Trial, Clarksville MI

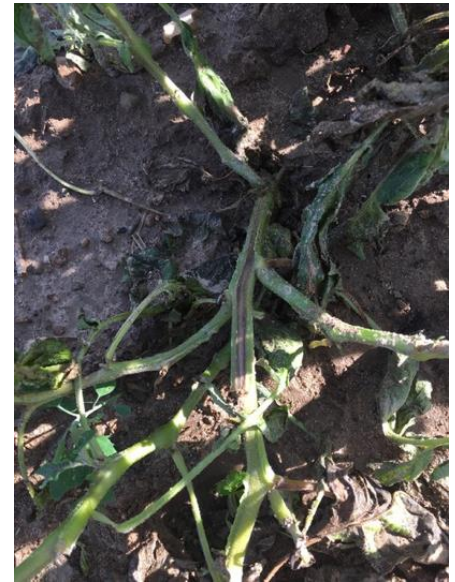
- Randomized complete design with four replications (4-row 25 ft plots)
- Inoculated with *Dickeya dianthicola* and *Pectobacterium parmentieri*
- Three varieties: Atlantic; Lamoka and Snowden
- Conventional grower management practices
  1. Non-inoculated
  2. 5% infected seed
  3. 10% infected seed
  4. 20% infected seed
  5. 40% infected seed
- Evaluated % emergence over 5 weeks and calculated the relative area under the emergence progress curve (RAUEPC)
- Harvest, weigh, grade and assess for soft rot infection



# Inoculated Field Trial, Clarksville MI



# Inoculated Field Trial, Clarksville MI





# Outreach and Extension

- YouTube videos in collaboration with ANR Communications, MSUE and Extension Educators:

Videos (1,953 views):

- Overview of diseases
- Disease management at planting
- Management over the growing season
- Management at harvest and in storage



913 views



320 views



238 views



482 views



# Outreach and Extension

- Mambetova, S. and Rosenzweig, N. 2019. Dose-response field trials for management of potato blackleg and soft rot. MSU Extension Clarksville Research Center Field Day. Wednesday, August 14, 2019. MSU AgBio Research Clarksville Research Center, Clarksville, MI growers, general public and stakeholders, 50 attendees.
- Mambetova, S. and Rosenzweig, N. 2019. Tree fruit studies shine at Clarksville Research Center Field Day. Monday August 19, 2019. Fruit Growers News.
- Rosenzweig N., Mambetova, S., DeDecker, J., Jean, M. and Springborn, F. 2019. New videos educate potato growers on disease management of soft rot bacteria. MSUE News. April 15, 2019.
- Mambetova, S. and Rosenzweig, N. 2019. Diggin' In Disease Management. Getting Soft: Management and diagnosis of soft rot diseases. Potato Grower. September 2019.



# Ongoing and Future Activities

- Field trials
  - Harvested 2019 trial, repeat 2020
  - Soft rot nursery soil persistence
- Storage
  - Sanitation for local varieties
- Monitoring
- Outreach

