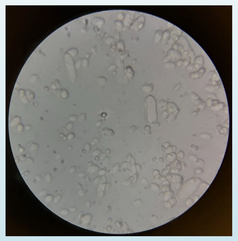
Safari 20SG Insecticide inhibits the growth of the fungal pathogen *Neodothiora populina*



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Goal

Determine if Safari 20SG insecticide inhibits growth of *Neodothiora populina.*

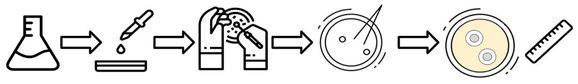
Introduction

- *N. populina* is a fungal pathogen that infects trembling aspen and causes mortality throughout Interior Alaska. (Ruess et. al 2021). *N. populina* infects the inner bark.
- Most aspen in Interior Alaska have damage from aspen leaf miner (ALM), which is a moth. The ALM larva eats the contents of the leaf epidermal cell layer on both sides of the leaf, which ultimately limits photosynthesis.
- If we want to see how the fungal pathogen inflicts damage alone, an insecticide treatment is needed to prevent alm, which is sprayed on the trunk of the tree. (Wagner et al. 2020)

Aspen Leaf Miner eating an aspen leaf

Fungal pathogen *N.populina* on aspen tree

Methods



Age of liquid culture (2,4,7 & 9 days)

3x of each treatment

Spread out liquid culture

Placed 2 filter papers soaked in insecticide or water on plate

Measured inhibition zone around filter

4 different culture ages:

Insecticide 3x

Sterile water 3x

N. populina 3x

Neg. Control

Results

Example of Inhibition Zone on *N. populina* based on liquid culture of different ages

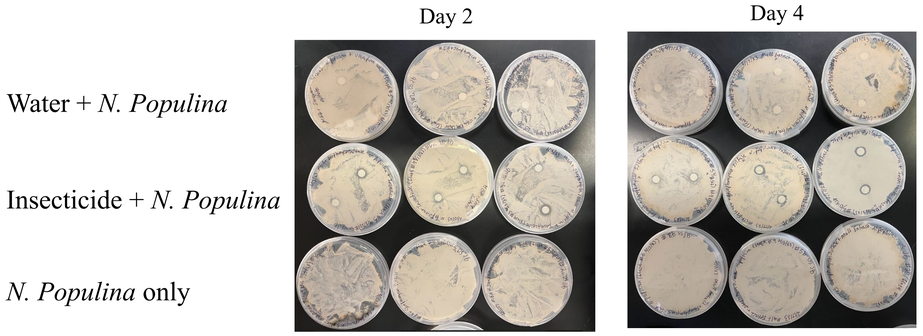
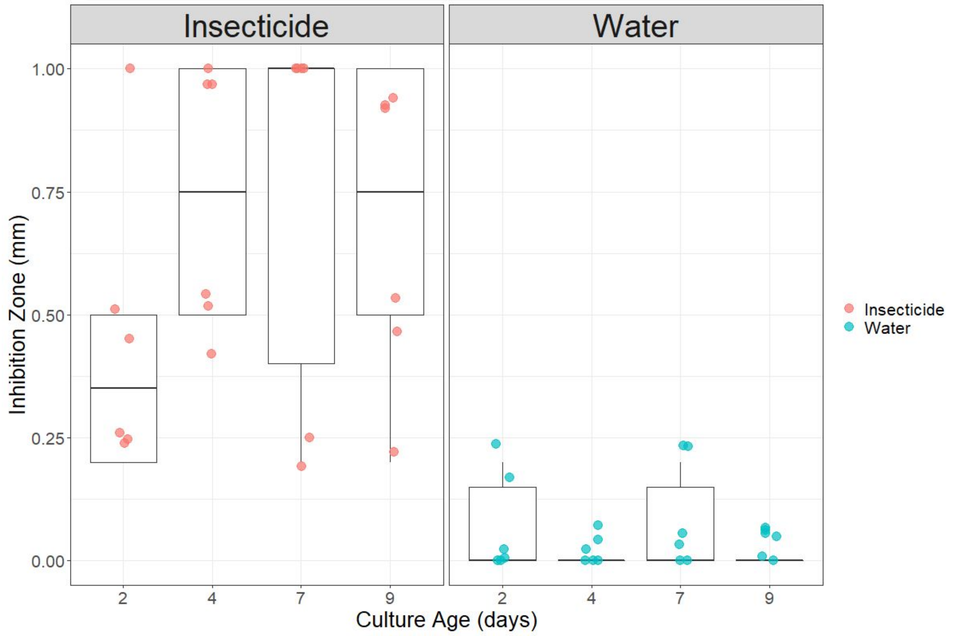
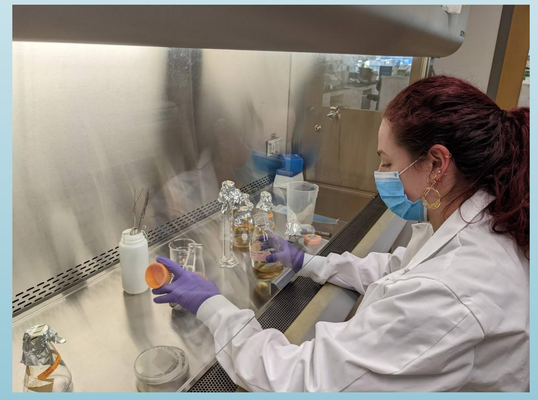


Figure 3. Example of treatment set up and comparison of inhibition zones. Day 2 on the left and day 4 on the right. Days 7 and 9 showed similar results.

Safari 20SG Insecticide inhibits growth of *N. populina*



Insecticide $p = 8.37*10^{-11}$. Culture age p= 0.473. Insecticide by culture age interaction p = 0.235



Conclusion

- The Safari 20SG insecticide inhibits the growth of the fungal pathogen *N.populina* but the strength of the effect needs further investigation.
- This suggests that the canker development may be reduced when aspen trees are treated with the insecticide.

Future Directions

- Determine how strong of an effect the Safari 20SG Insecticide has on the growth of the fungal pathogen *N.populina* on aspen trees.
- Test the effects of different concentrations of the insecticide on the growth of *N. populina* in liquid culture to determine the minimal inhibitory concentration.

References

Ruess, Roger W., Loretta M. Winton, and Gerard C. Adams. "Widespread mortality of trembling aspen (Populus tremuloides) throughout interior Alaskan boreal forests resulting from a novel canker disease." *Plos one* 16.4 (2021): e0250078.

Wagner, Diane, Jenifer M. Wheeler, and Stephen J. Burr. "The leaf miner Phyllocnistis populiella negatively impacts water relations in aspen." *Tree Physiology* 40.5 (2020): 580-590.

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