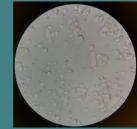


# The insecticide Safari 20SG inhibits the growth of *Neodothiora populina*, an emerging fungal pathogen in trembling aspen



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## Goal

**Determine at which concentration Safari 20SG insecticide influences *Neodothiora populina* growth.**

## Background

- N. populina* is a fungal pathogen that causes canker disease in trembling aspen and often results in tree mortality throughout Interior Alaska. [1]. *N. populina* infects the inner bark.
- It is difficult to assess the effect of canker as aspen is also impacted by the 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. [2]



Aspen Leaf Miner eating an aspen leaf



Canker caused by fungal pathogen *N. populina* on aspen tree

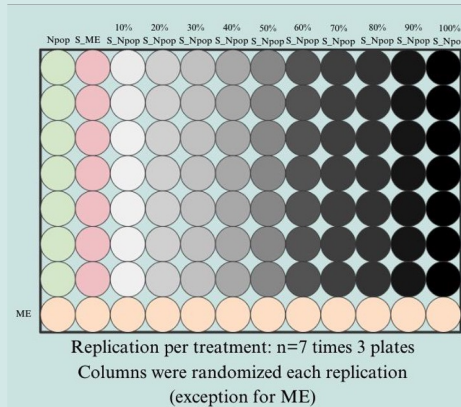
- We previously determined that the insecticide Safari 20SG had inhibited the overall growth of *N. populina*.

## Acknowledgements

We acknowledge that our research facilities and our Troth Yedkha' campus is located on the ancestral lands of the Dena people of the lower Tanana River. Research reported in this publication was supported by the National Institute Of General Medical Sciences of the National Institutes of Health under Award Number T34GM141009. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health. This work was supported by USDA Forest Service and the BNZ - LTER (NSF, DEB-1636476 & DEB-2224776), Alaska INBRE (NIH under Award Number 2P20GM103395) and by Institutional Development Award (IDeA) from the National Institute of General Medical Sciences of the National Institutes of Health (grant number P20GM103395) and BLAST (NIH Common Fund, through the Office of Strategic Coordination, Office of the NIH Director with the linked awards: TL4GM118992, RL5GM118990, UL1GM118991). We acknowledge the support of UAF and URSA. We thank Drown Lab and members for their thoughtful peer review. A big thanks to Ph.D students Tereza Smrhova, Andrea Zubrova University of Chemistry and Technology, Prague, Czech Republic for their help in optimizing the growth of *N. populina*.

## Methods

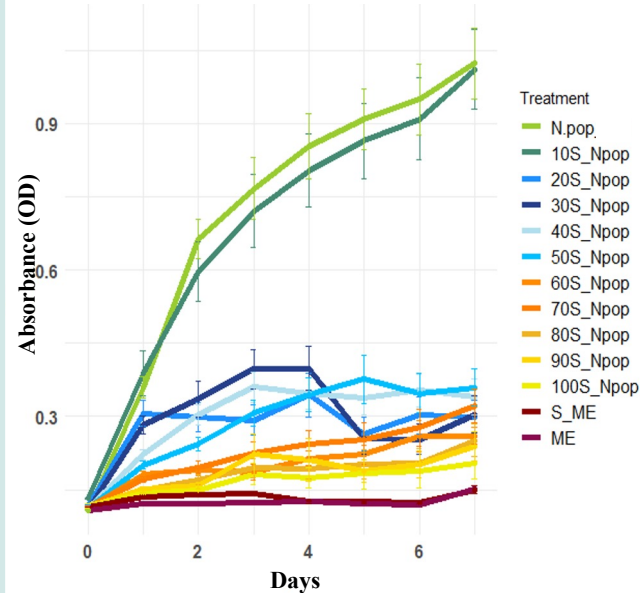
- Each well contained 199  $\mu$ l Malt extract media containing streptomycin sulfate (ME) with concentrations of Safari 20SG ranging, 0% to 100% (0.1797g/mL) and 1  $\mu$ l of a 3 day old *N. populina* culture.
- Growth of *N. populina* was inferred by measuring absorbance (OD)
- ME & ME containing 100% Safari 20SG (S\_ME) did not contain *N. populina*.



Absorbance at 600 nm for days 0-7

## Results

### Safari 20SG inhibits growth of *Neodothiora populina*



Safari 20SG & Time & interaction  $p=2*10^{-16}$

- Using an ANOVA, we determined that Safari 20SG concentration & Time significantly affected growth of *N. populina*.
- All pairwise comparisons (Bonferroni correction applied) showed significant differences in growth across Safari 20SG concentrations.
  - 10%:** *N. populina* growth did not differ from *N. populina* growth without Safari 20SG (green)
  - 20-50%:** growth of *N. populina* was inhibited (blue)
  - 60&70%:** even stronger inhibition (dark orange)
  - 80-100%:** no significant growth (yellow)

## Conclusion

- Concentrations of Safari 20SG above 10% inhibited the growth of *N. populina*.
- Canker development may be reduced when aspen trees are treated with Safari 20SG.
- Safari 20SG may not be feasible insecticide to use to look at the effect of *N. populina* on trembling aspen without the presence of ALM.

## Future Directions

**Determine how much Safari 20SG insecticide decreases *Neodothiora populina* growth.**

## References

- [1] Ruess et al 2021 PLoS ONE 16(4): e0250078.
- [2] Wagner et al 2020 Tree Physiology, 40 (5): 580–590



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