Variation in Tolerance of *Pinus taeda* Families to Root Infesting Fungi *Grosmannia huntii* and *Leptographium terebrantis*

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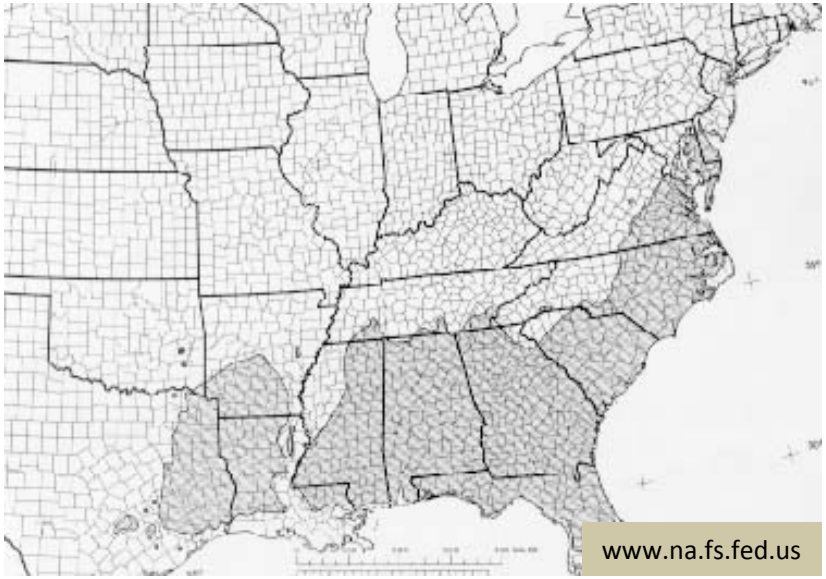
Loblolly Pine



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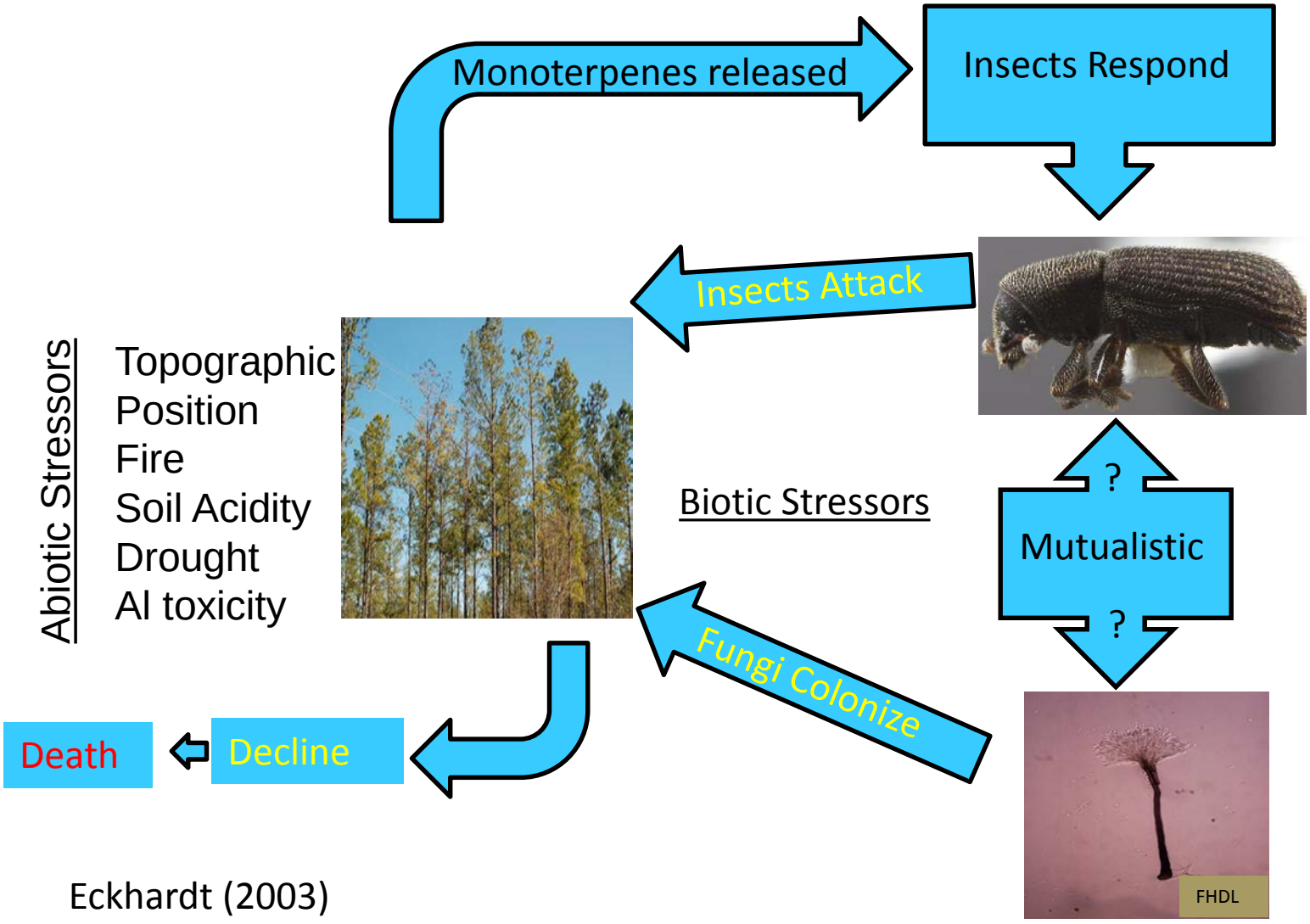
Southern Pine Decline



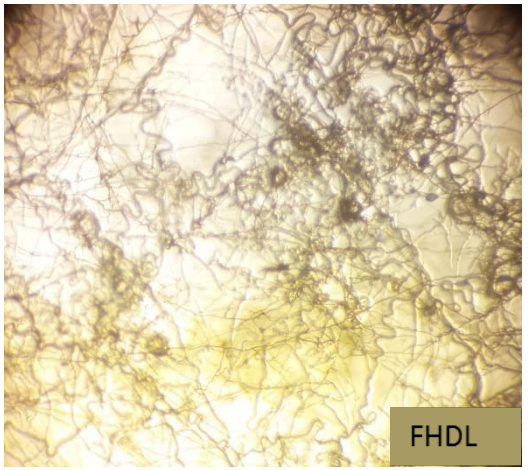
Eckhardt (2003)

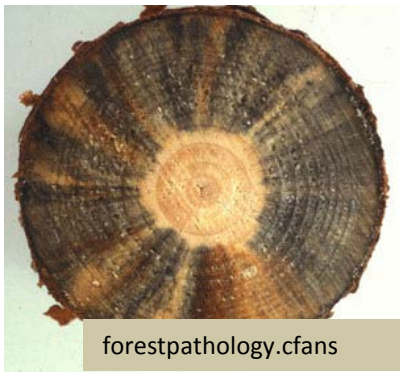
Ophiostomatoid Fungi

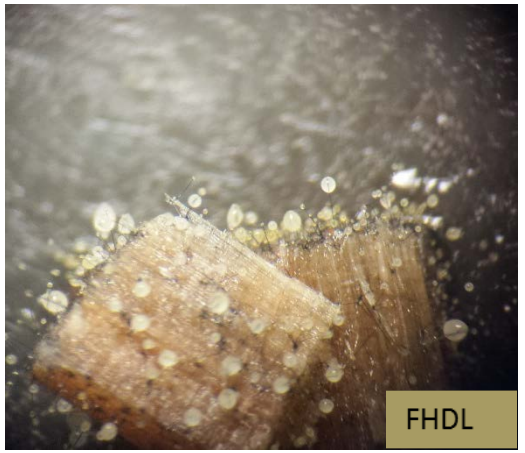
- *Leptographium terebrantis*

  native fungi
- *Grosmannia huntii*

  non-native fungi







Objectives

- Study 1

Seedling screening loblolly pine families for susceptibility to *Leptographium terebrantis* and *Grosmannia huntii*

- Study 2

Screen mature loblolly tree families for *L. terebrantis* and *G. huntii* susceptibility and correlate the results to seedling families

- Study 3

Screen the pathogenicity of *L. terebrantis* isolates to be used in future studies

Seedling Screening Study (Study 1)

- Year 2014:
  - Plum Creek, The Westervelt Company, Rayonier, ArborGen and Weyerhaeuser
- Containerized seedlings
  - 38 families
- Bare-root seedlings
  - 4 families

Study 1

- RCBD design
  - 6 blocks/replications
  - 1,176 seedlings/block
  - ProMix BX potting medium

Study 1

Initial height and RCD

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12 weeks after potting

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Artificial inoculation

- *L. terebrantis*
- *G. huntii*
- Wound
- Wound+media

Study 1

8 weeks after inoculation

⬇

Growth measurements height and RCD

⬇

Seedlings harvesting

⬇

Stained with FastGreen solution

⬇

Measurements

-Lesion length

-Occluded vascular tissue

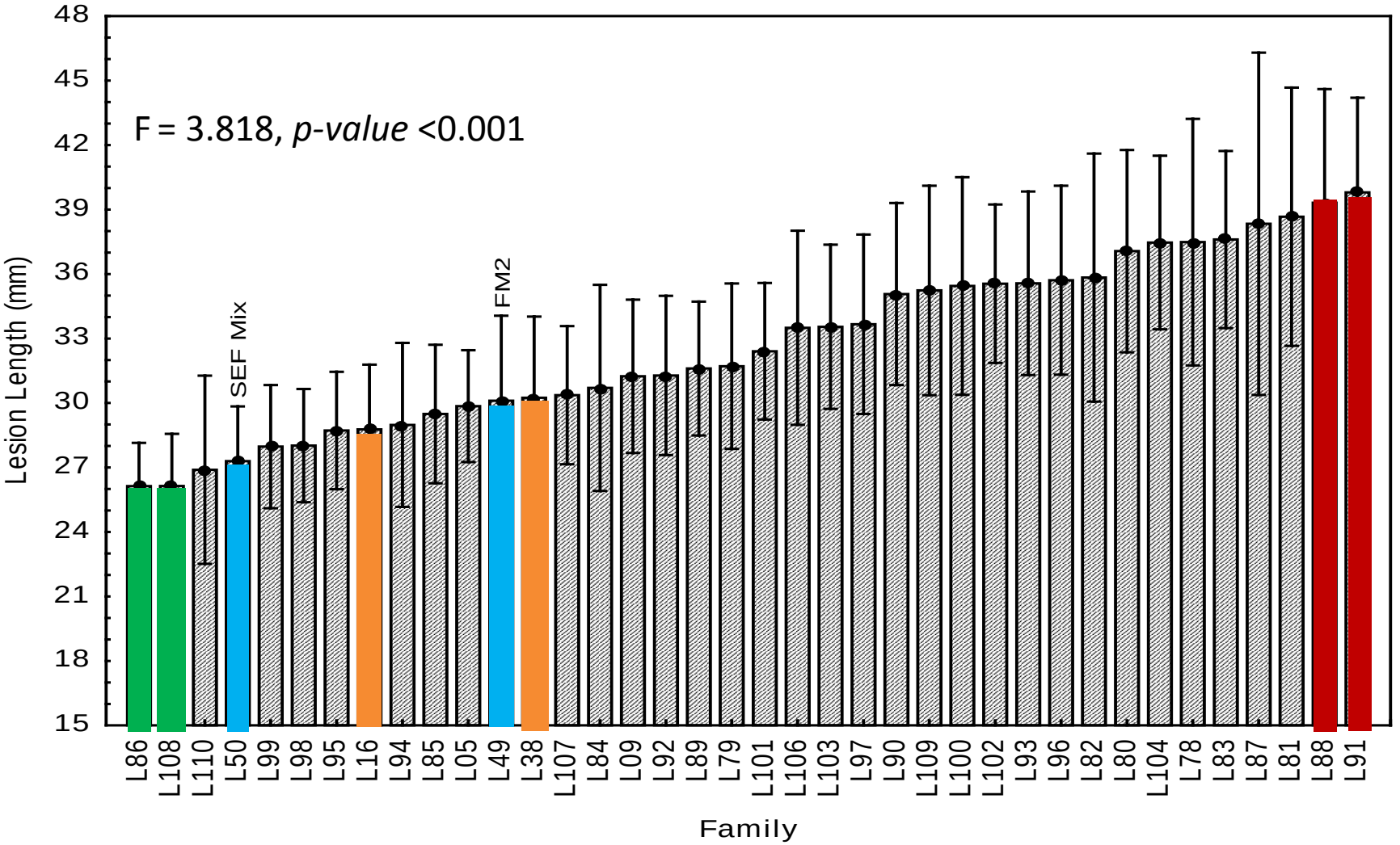
⬇

Re-isolation

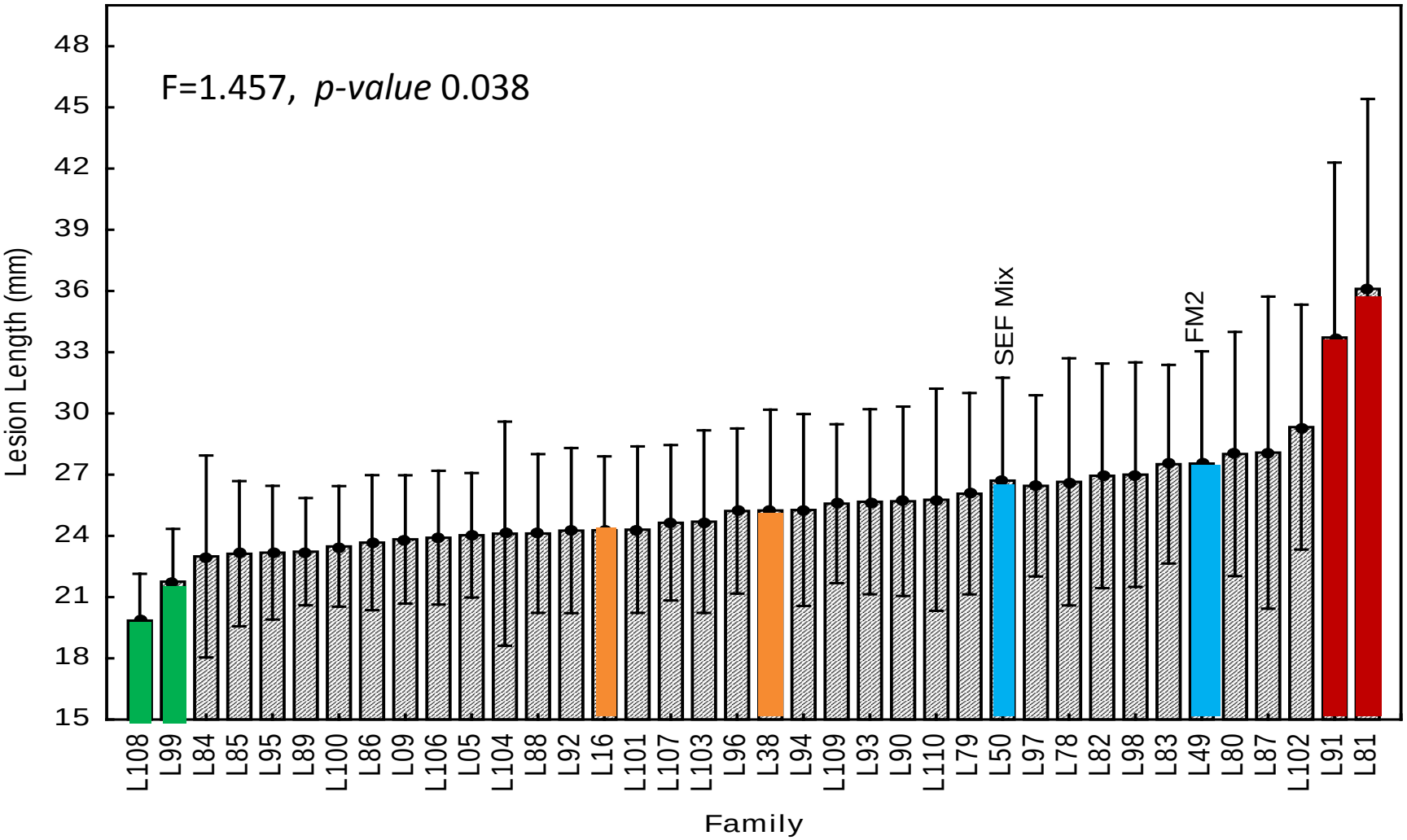
Study 1 Results

Effect	DF	Lesion Length (*P-value*)
Family	37	0.01
Treatment	3	<0.0001
Family*Treatment	111	<0.0001
Block*Family	185	<0.731

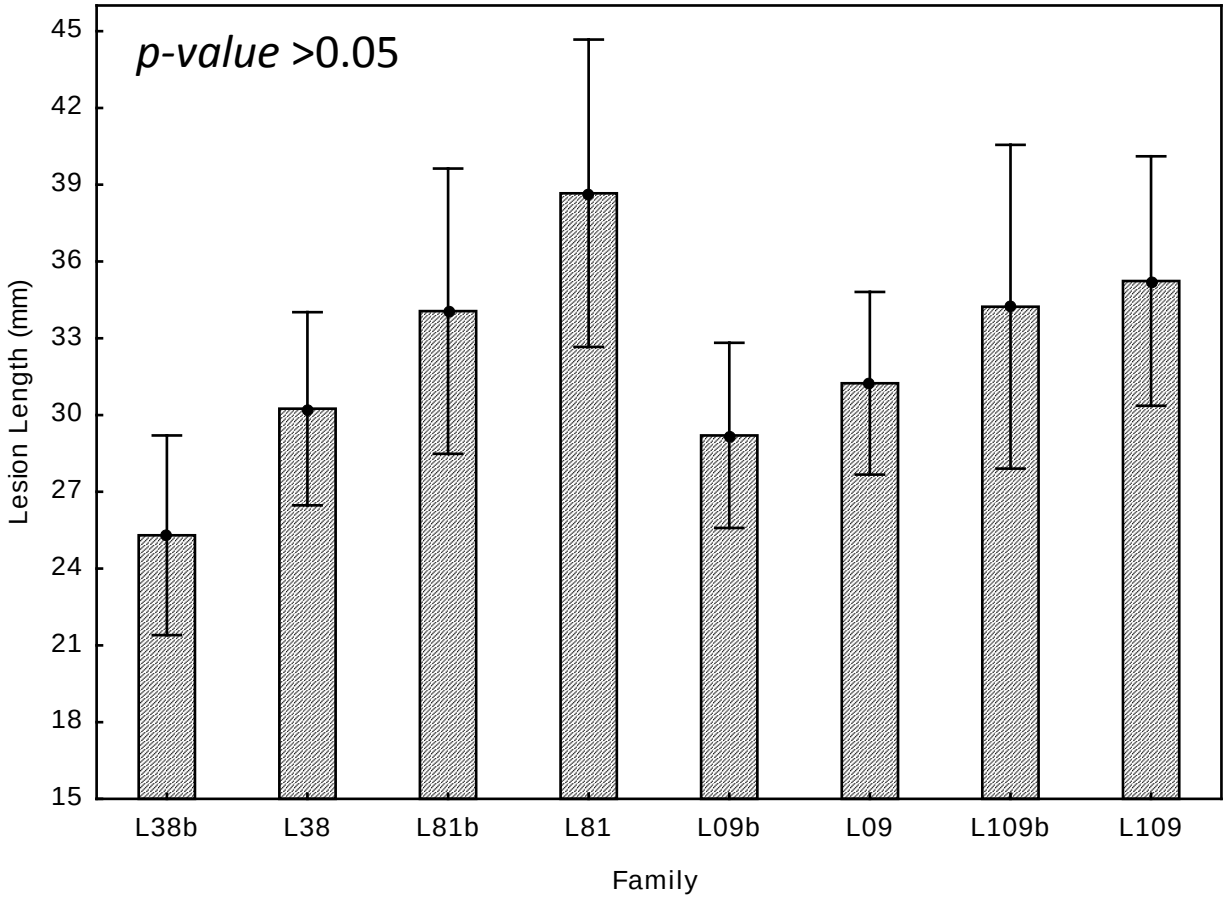
Loblolly Family Ranking - *Grosmannia huntii*



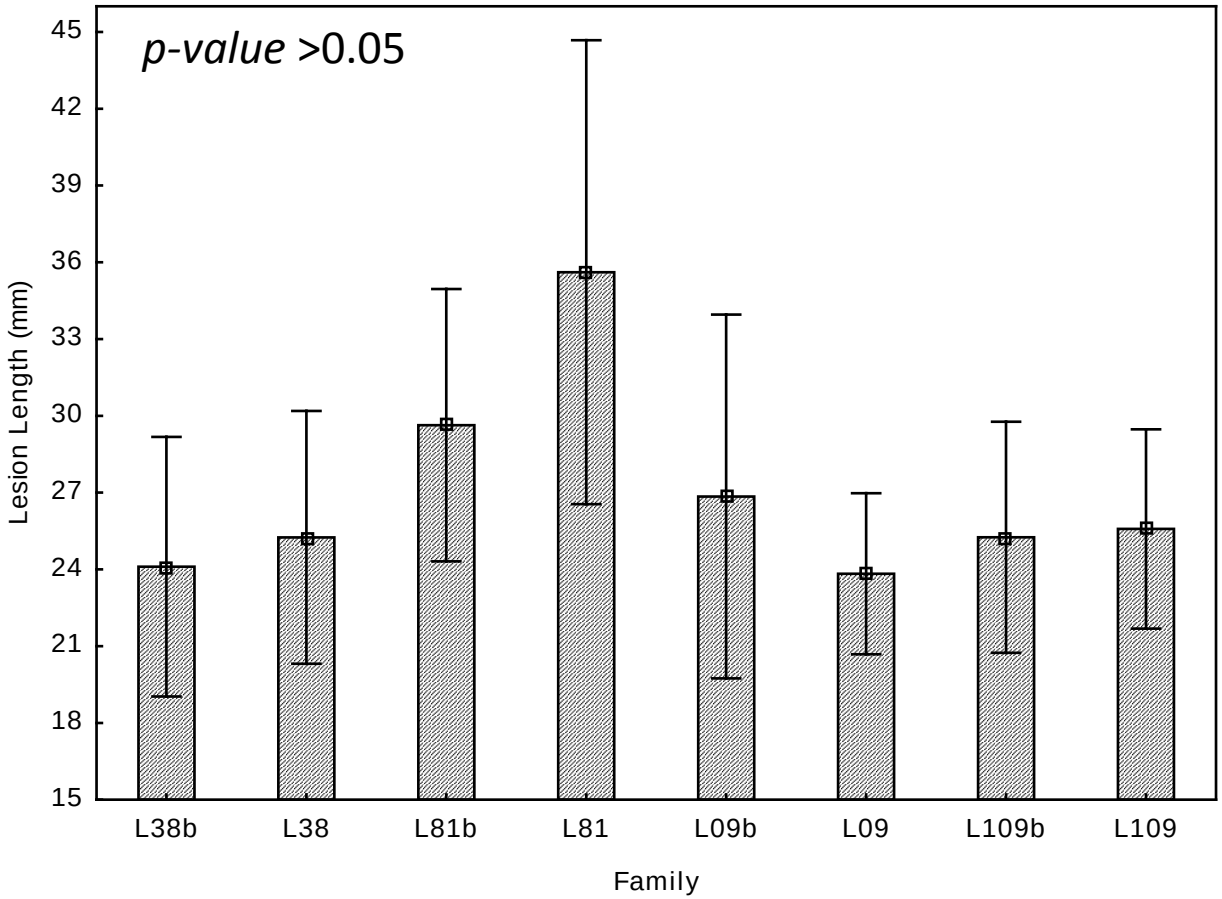
Loblolly Family Ranking – *Leptographium terebrantis*



Bare-root vs Containerized - *Grosmannia huntii*



Bare-root vs Containerized – *Leptographium terebrantis*



Conclusion

- Lesions found on all seedlings inoculated
- No significant variation within each family
- Variation between families
- Families L108 had consistently smaller lesions for both fungi
- Families L91 had consistently larger lesions for both fungi
- There were no significant difference between the bare-root and container grown families tested

Mature Root Inoculation Study (Study 2)

- Trial initiated in July 2015 in 2 locations
  - Eufaula, AL
  - Cordele, GA
- 4 families are being screened based on previous seedling screening trial results
  - 2 moderately susceptible and 2 tolerant families

Leptographium terebrantis Isolate Screening (Study 3)

A single family of loblolly pine

Completely randomized design

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42 isolates of *L. terebrantis*

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Measurements

-Lesion length

-Occluded vascular tissue

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Re-isolation

Acknowledgements

- Dr. Lori Eckhardt
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