

Fusiform Rust Control Fungicides

Ryan Nadel

Auburn University, Southern Forest Nursery Management Cooperative



Southern Forest Nursery Management Cooperative – Research Towards Increasing Nursery Production



Fusiform rust

- *Cronartium quercuum* f. sp. *fusiforme* the causal agent of Fusiform rust is still of major concern to many loblolly and slash growers
- Both genetic and cultural options are available to reduce the risk of this disease but the most effective control is the use of fungicides
- The Nursery Coop in 1980 was instrumental in the registration of Bayleton[®] with the incidence of rust fell from 2.5% to 0.1% due to the use of this compound. Fungicide usage fell from 4 lbs/ac/yr to less than 1lb/ac/yr due to the reduced number of applications
- The Nursery Coop continued to look for alternative chemistries to assist with Fusiform control and was instrumental in the registration of Proline[®] in 2011



Proline[®] as a seed treatment

- As a seed treatment, current labelled rate is 10 fl oz./50 lb of seed
- These labelled rate are based on the use of Bayleton[®] activity
- The ability to identify the lowest effective rate of Proline[®] for use on conifer seed will help decrease fungicide



Seed treatment study

Fungicide	Manufacturer	Active Ingredient	Chemical Class
Bayleton®	Bayer Cropscience	Triadimefon - 50%	Triazoles
Proline® 480SC	Bayer Cropscience	Prothioconazole – 41.0%	Triazoles

Rates of Proline[®] tested

Active ingredient	Rate				
	1x (recommended)	0.5 x	0.25 x	0.125 x	0.0625 x
Control (water)	N/A				
Triadimefon -50% Bayleton [®]	8 oz/ac				
Prothioconazole Proline [®]	10 fl oz/ac	5 fl oz/ac	2.5 fl oz/ac	1.25 fl oz/ac	0.625 fl oz/ac

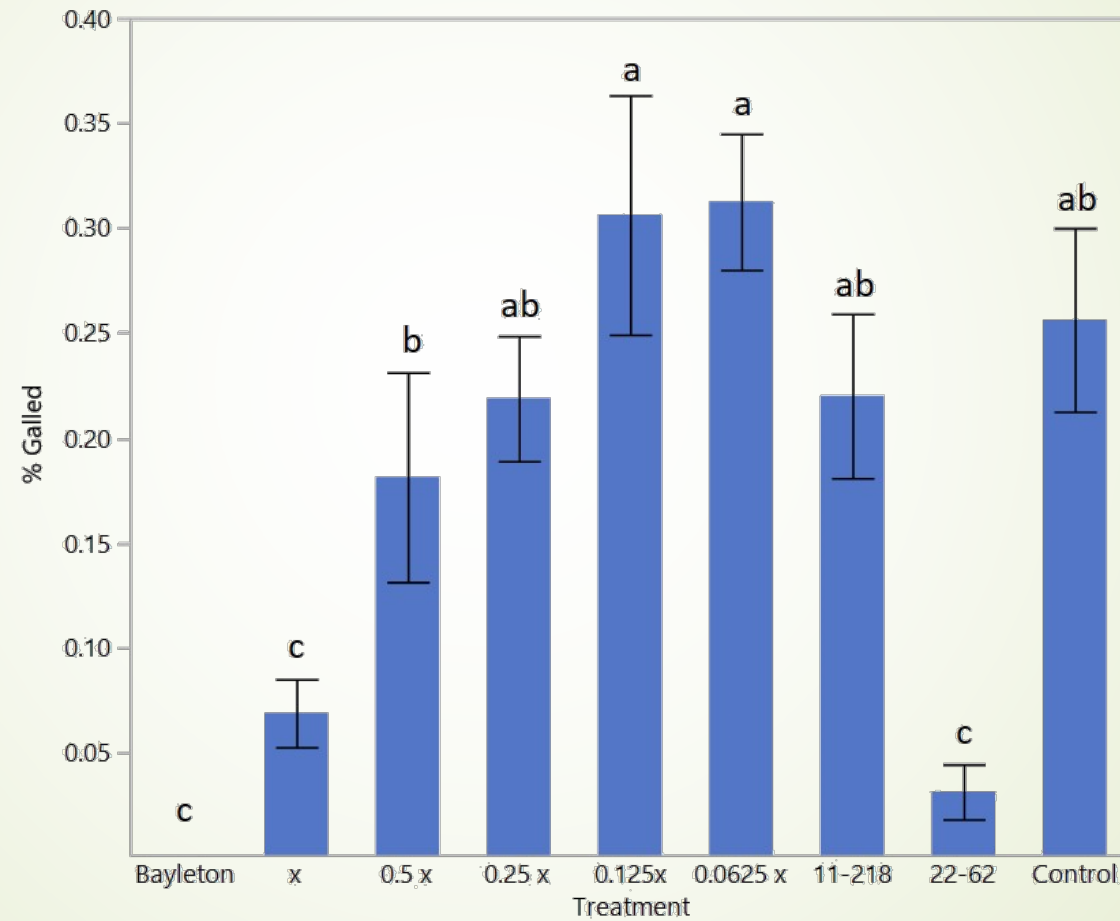
Seed treatment study

- Fungicide treatments applied on seed at Auburn Laboratories
- Seed sent to Asheville, NC Rust Lab
- Seed sown
- 3 weeks post germination seedlings challenged with rust spores
- 3 and 6 month evaluations made by NC Rust Center

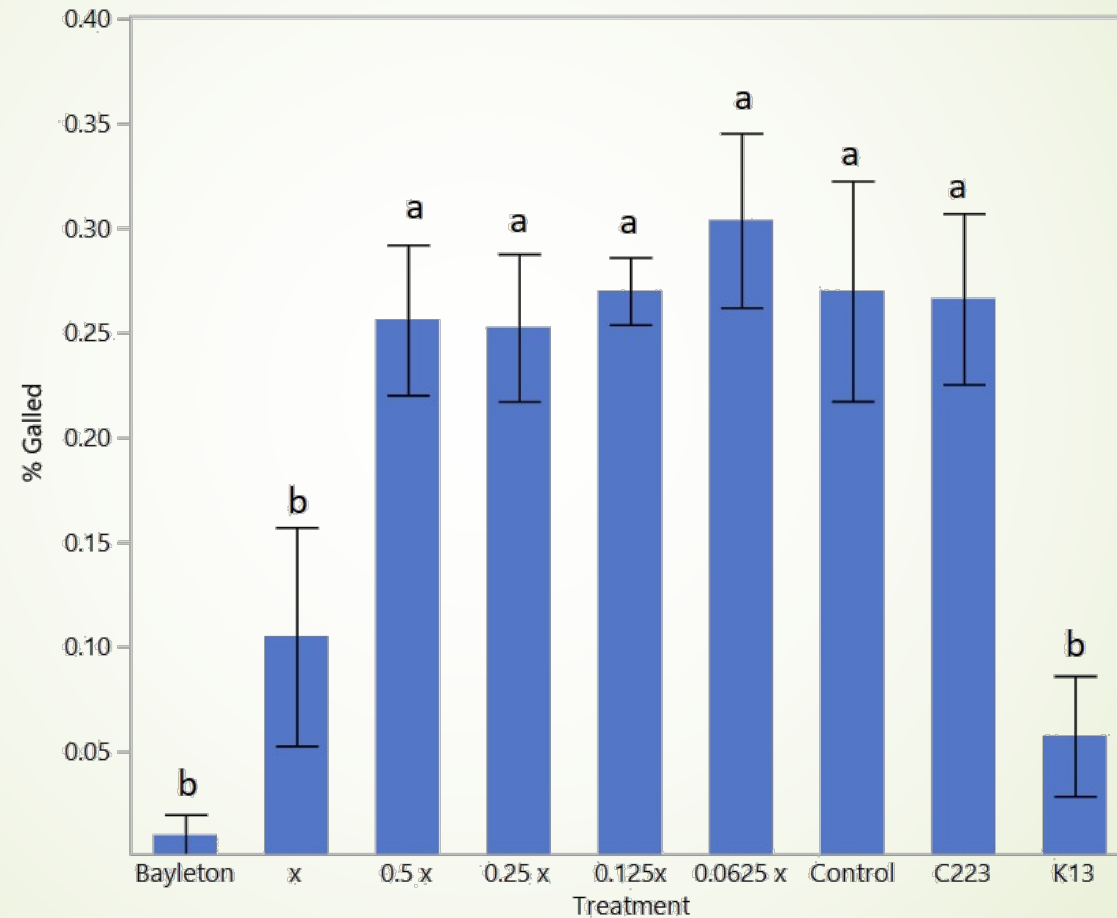




Loblolly seed treatment results



Slash seed treatment results



Proline[®] as a seed treatment

- For seed treatment, the labelled Proline[®] rate was most effective in controlling Fusiform rust infection.
- Reducing the rate of Proline[®] resulted in significant increases in Fusiform gall incidence
- The recommended seed treatment resulted in galling incidence equivalent to seed treated with Bayleton[®] and that of seed from Fusiform tolerant families

Active ingredients tested for foliar spray

Fungicide	Manufacturer	Active Ingredient	Chemical Class
Bayleton®	Bayer Cropsience	Triadimefon - 50%	Triazoles
Compass®	Bayer Cropsience	Trifloxystrobin – 50%	Oximino acetates
STRATEGO® 250EC	Bayer Cropsience	Propiconazole – 11.4% Trifloxystrobin – 11.4%	Oximino acetates + Triazoles

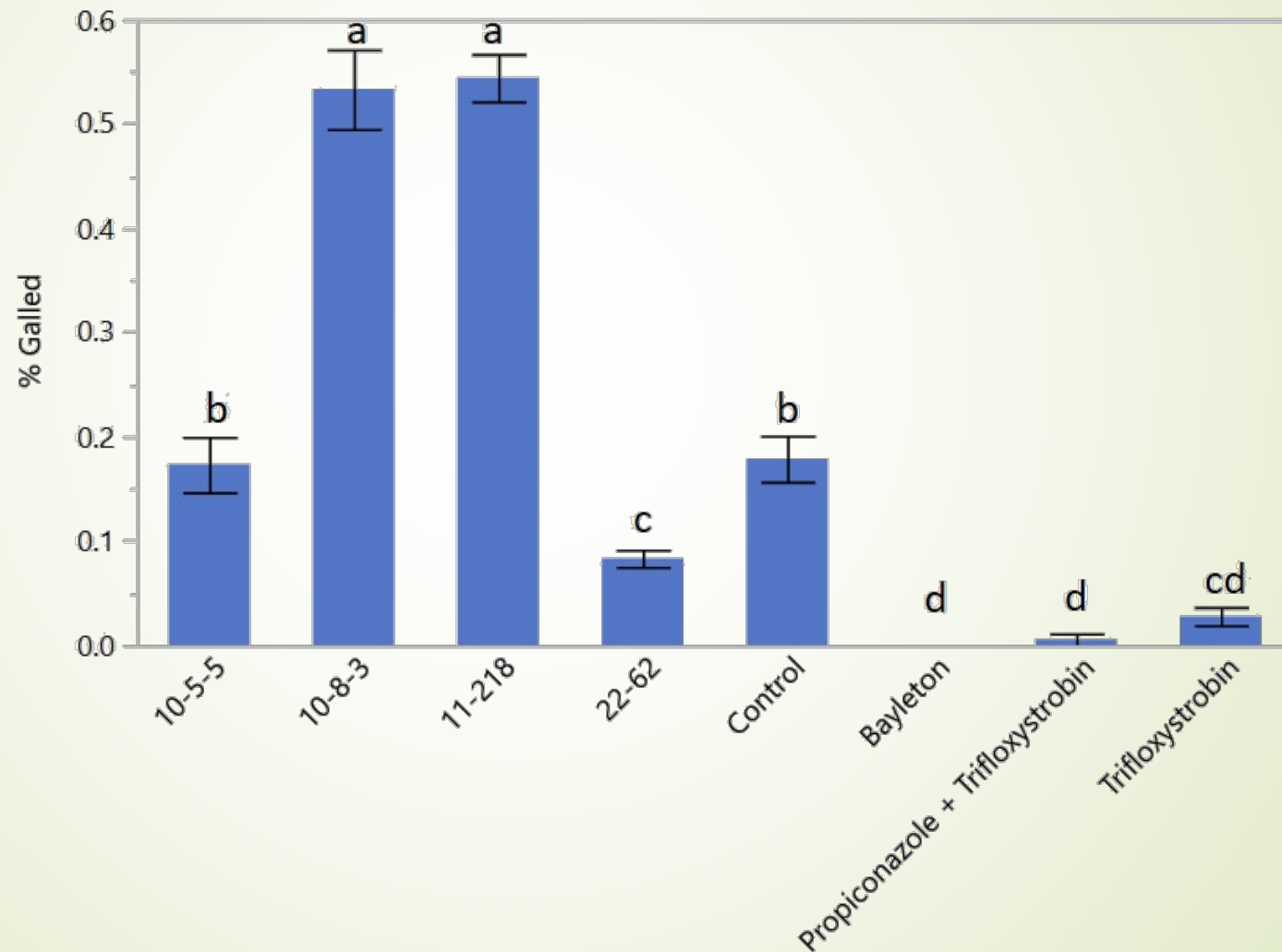
Seed treatment study

- Fungicide treatments applied to seedlings at Auburn Laboratories at 2 weeks post germination
- Seedlings sent to Asheville, NC Rust Lab
- Seedlings challenged with rust spores at 3 weeks post germination
- 3 and 6 month evaluations made by NC Rust Center

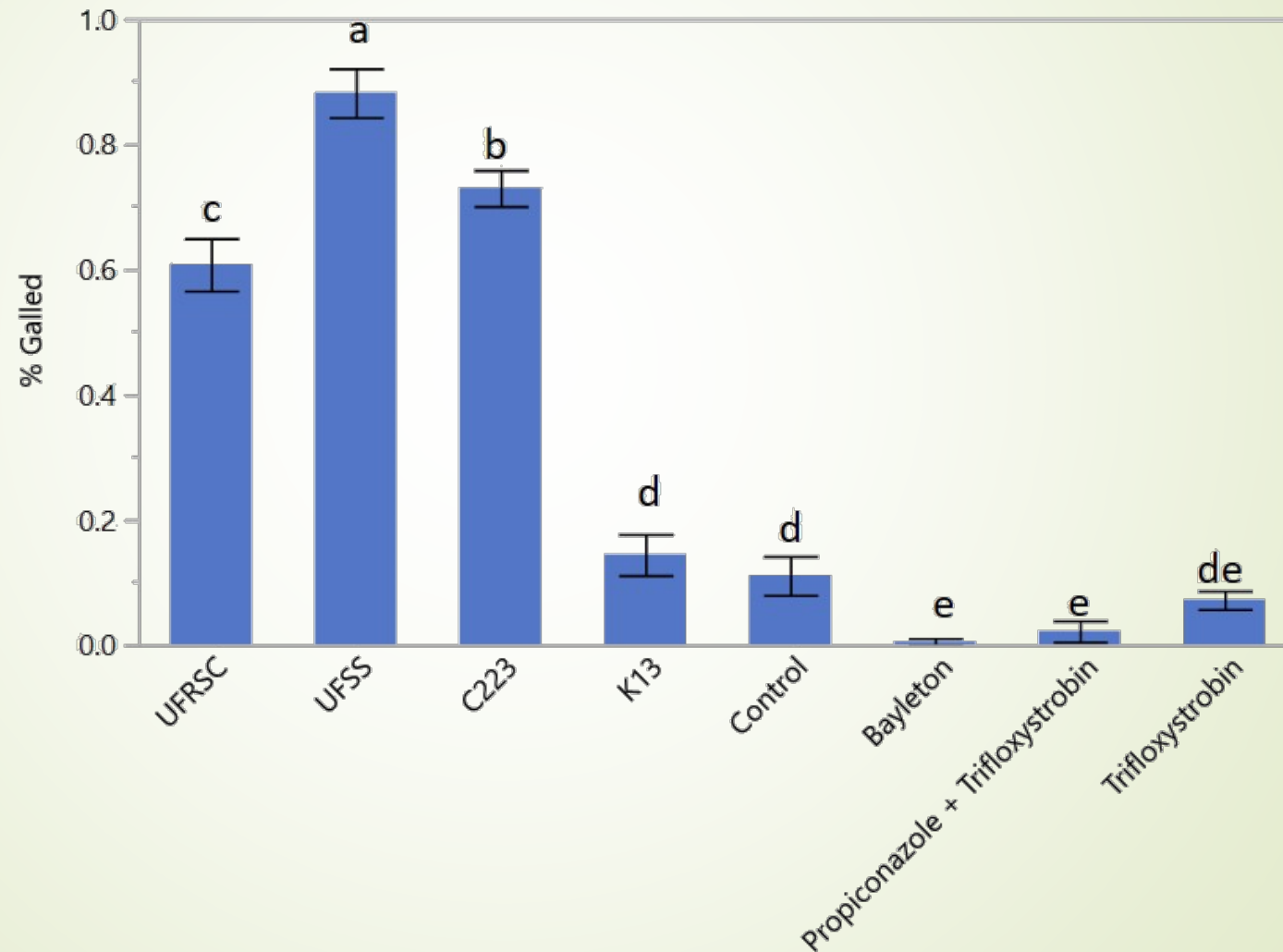


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Loblolly pine seedlings treatment results

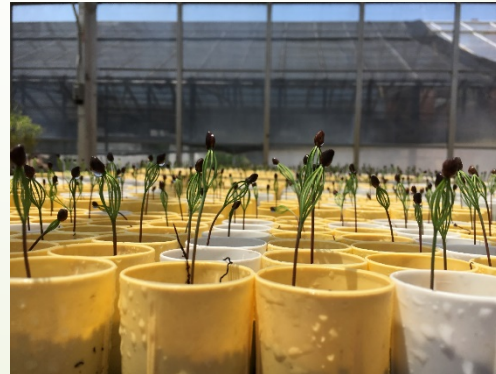


Slash pine seedlings treatment results



Seedling treatment

- The new chemistries tested as a seedling control were found to be effective in reducing Fusiform rust
- The active ingredients Trifloxystrobin (Compass®) and Propiconazole + Trifloxystrobin (STRATEGO®) were found to be as effective as Triadimefon (Bayleton®)
- New chemistries show promise to potential alternatives as a Fusiform rust seedling treatment. These chemistries, however, require registration prior to being used commercially



Next steps

- Undertake field performance trials to assess alternative chemistries that show promise
- Will assess:
 - Seedling quality
 - Number of rust galls
 - Root morphology



Acknowledgements

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