

The Influence of Container Color and Medium Depth on Avian Herbivory of Longleaf Pine Seed



Kelsey Shoemaker
Agricultural Business

D. Paul Jackson
Associate Professor of Plant Science



What is Longleaf Pine?

- 212 vertebrate species; 38 are specialists
- > 30 threatened/endangered plant and animal species
 - Gopher tortoise
 - Red-cockaded woodpecker
- Considered the most valuable pine in terms of aesthetics, quality, and resistance to fire, insects, and diseases (Barnett and McGilvray, 2000)



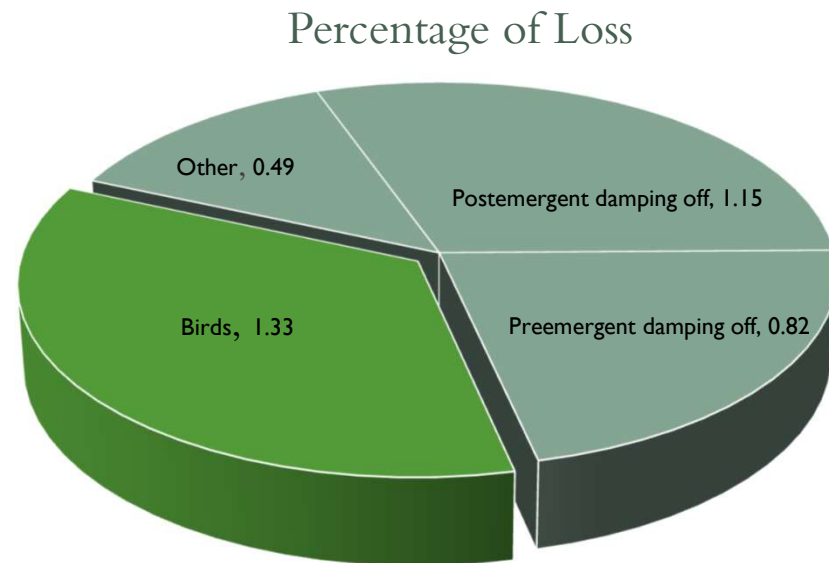
Longleaf Pine Production in the Southern U.S.

- 2 seedling cultures:
 - Bareroot
 - Container
 - > 68% of total U.S seedlings
 - > 216,000,000 container-grown seedlings produced in 2018
(Haase and others, 2019)
 - Longleaf pine ~ 63% of container production
(Enebak, 2012)



Seedling Mortality

- Average annual seedling loss is 3.8% (Starkey & others, 2015)
- Bird predation - leading cause of seed loss and germinant mortality
- 1% seed loss indicates revenue loss of \$150,000



Nursery Observations

1. Shade cloth can increase losses
2. Birds tend to forage more heavily on longleaf pine seeds than other pine species (Mike Coyle, IFCO)
3. 2018 research trial, birds exclusively foraged on seeds sown in cavities filled to 5” (operational depth) than those filled to 3” (two-thirds capacity) (D. Paul Jackson, 2018 research trial)



Research Question

Does container color or medium depth influence the level of avian herbivory during germination?



H₀: There is no difference in avian herbivory of longleaf pine seeds sown at two medium depths and in black or white containers.

Methods

- Experimental unit = tray of 49 cells
- Explanatory variables:
 - 2 media depths:
 - 5 inches (operational)
 - 3 inches (two-thirds capacity)
 - 2 container colors:
 - black
 - white



Methods

- 3 repetitions per treatment
- 24 trays (12 trays per site)
- Intact or consumed/missing seed recorded for 10 days

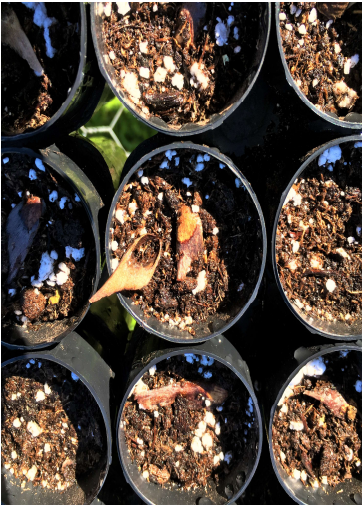


Wooded Fencerow

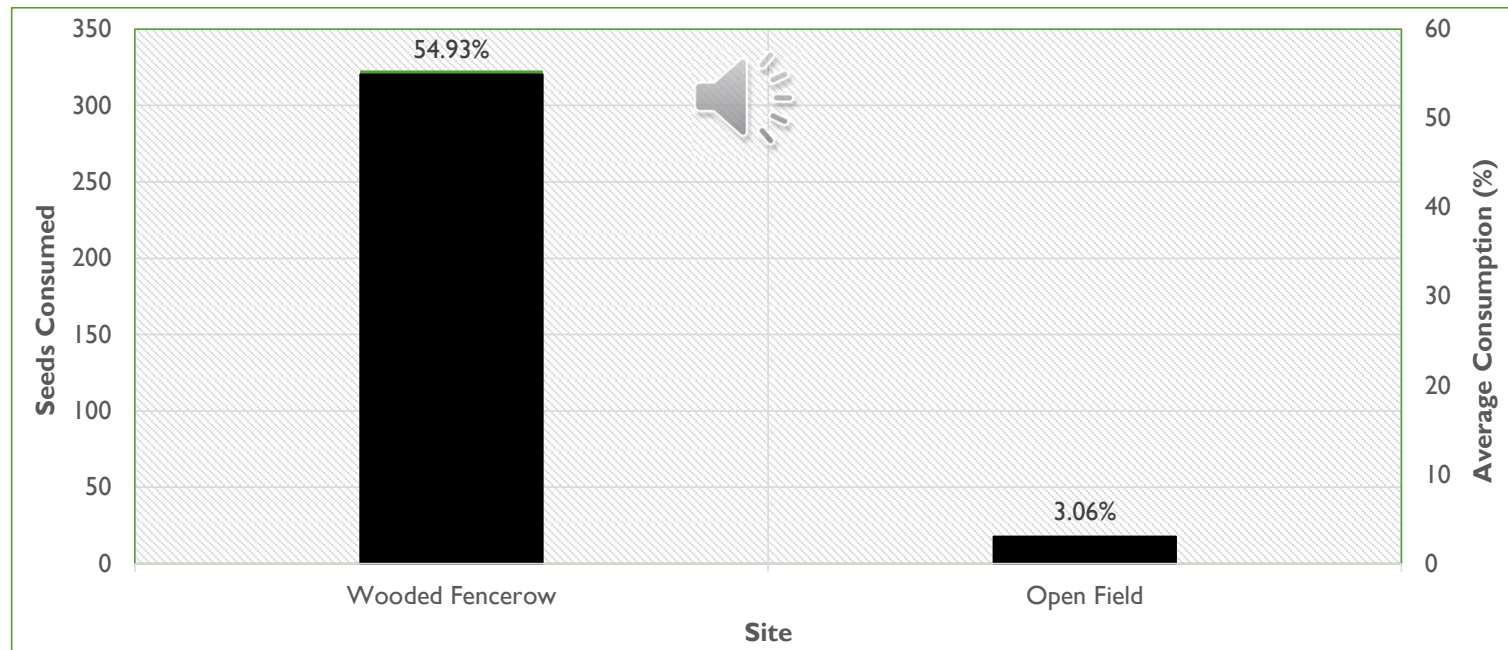


Open Field

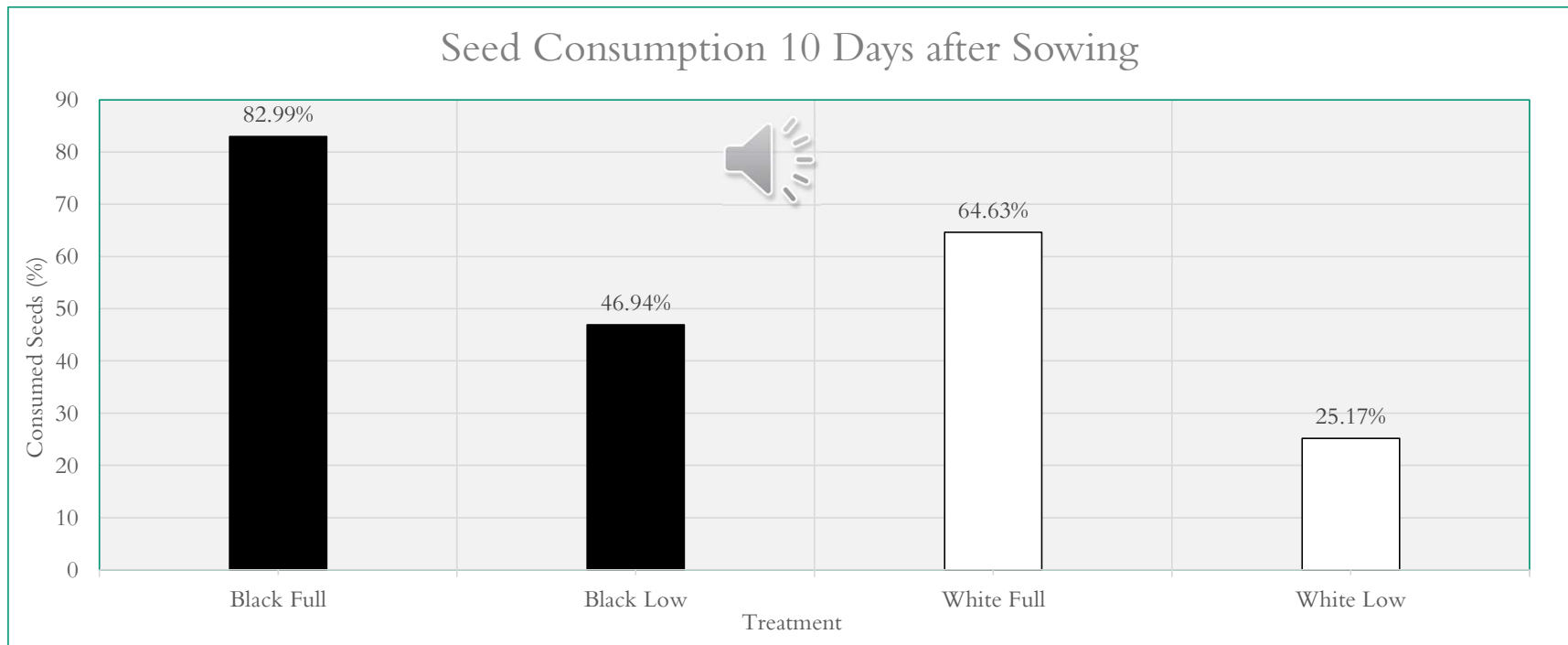
Trends



Site Averages



Treatments

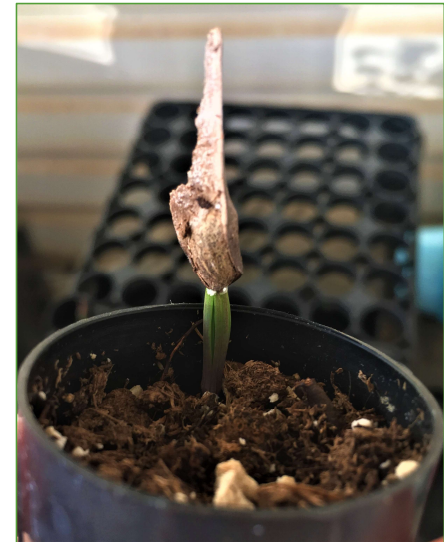


Container Color and Medium Depth



Where do we go from here?

- Will 3” medium depths be conducive for high quality seedlings?
- How can we reduce losses without sacrificing seedling quality?





Questions?

kds054@latech.edu



[EMAIL: KDS054@LATECH.EDU](mailto:kds054@latech.edu)