Apr 12th, 8:30 AM - 10:30 AM

Influence of Container Color, Media Depth, and Subsequent Light Availability on Stem Elongation of Longleaf Pine

Nathan G. Bolner
Louisiana Tech University

D. Paul Jackson
Louisiana Tech University

Influence of Container Color, Media Depth, and Subsequent Light Availability on Stem Elongation of Longleaf Pine

Nathan G. Bolner[1] and D. Paul Jackson[2]
[1]*Undergraduate Student, Forestry, School of Agricultural Sciences and Forestry*
[2]*Assistant Professor, Plant Science, School of Agricultural Sciences and Forestry*

Genetically pure longleaf pine (*Pinus palustris)* seedlings differ from other southern pines by not exhibiting an extension of a hypocotyl or stem during germination. However, hypocotyl extension in longleaf pine has been observed, and it is believed by some that this elongation is an indication that hybridization has occurred with loblolly pine (*Pinus taeda*), thus, forming a hybrid species known as Sonderegger pine (*Pinus x sondereggeri*). During propagation, true longleaf pine buds tend to remain flaccid near the growing media level in the container. In nature, Sonderegger pines can naturally occur where longleaf and loblolly pines are in close proximity of each other and when pollen release occurs simultaneously. As a routine practice in the nursery, Sonderegger pines are culled during processing and packing when the elongated stems with terminal buds are evident. General knowledge at the present time is that Sonderegger pines are undesirable due to their non-merchantable form years after planting.

Earlier research has shown that even when longleaf pine hypocotyl extension occurs, elongation can cease at some point in the growing season; then, development can continue as normal (unpublished data). It is not fully understood why hypocotyl extension occurs in longleaf pine grown from certain seedlots. However, there are two theories being proposed: 1) some seedlots collected from longleaf pine cones are contaminated with hybrid seeds and are exhibiting hypocotyl extension that is not true to longleaf pine genetics or 2) environmental factors such as light availability during seed germination in a container with varying depths of growing media are influencing growth.

To test this theory, longleaf pine seed was sown in RL98 Stubby™ container cells that were either filled to normal levels or partly filled leaving the top one-third of the cell free of growing media. The seedlings that develop in cells partly filled may be affected by the dimmer light conditions and be more likely to express hypocotyl extension. White and black container cells were seeded in equal numbers to test the influence of light reflection and absorption on germination and subsequent hypocotyl extension. By understanding the effect light availability has on the expression of stem elongation, methods for accurate and early detection of longleaf pine hybrids in nurseries may be improved. Our null hypothesis is that the level of growing media in white or black container cells will have no effect on longleaf pine hypocotyl extension.