

The JTH Forestry Research Center, located in Mora, NM, provides science-based solutions for private, tribal, state, and federal forest managers, who face the threat of catastrophic fires due to overgrown forests and the inability of post-fire forest communities and ecosystems to naturally regenerate after such fires. The center is the only program in the four corner states (NM, UT, AZ, and CO) focusing on research efforts along the entire reforestation pipeline.

VISION

Leading the nation in climate-smart reforestation research that supports the entire reforestation pipeline from seed to nursery systems to tree planting.

MISSION

The mission of the John T. Harrington Forestry Research Center at Mora is to advance the understanding of restoration activities in forested areas in New Mexico through multidisciplinary research, education, and stakeholder collaborations.

VALUE ADDED TO NEW MEXICO

- Climate-smart reforestation research
- Seedling development, nursery systems, and tree planting efforts
- Post-fire restoration research
- Investigating drought tolerance of *Pinus ponderosa* and *Populus tremuloides*

ONGOING RESEARCH

Research efforts to evaluate vegetation control and animal protection measures in a post-fire restoration environment revealed preliminary results that use of managed nurse vegetation improves survival. Additionally, investigations to optimize outplanting strategies in a post-fire environment through seedling size, planting windows, and drought conditioning led to preliminary results that monsoonal plantings improve survival of planted trees. Nucleation planting strategies in post-fire environments to improve the long-term conditions of water resources and forest health contributed to preliminary results showing high-density nucleation plantings maintain proper stocking levels.

Research is being conducted to develop a baseline model for calculating carbon storage of recently established ponderosa pine across the southwestern US. This will contribute to the understanding of carbon sequestration amid reforestation activity.



The College of Agricultural, Consumer, and Environmental Sciences is an engine for economic and community development in New Mexico, improving the lives of New Mexicans through academic, research and Extension programs.

ACES Pillars for Economic and Community Development



RECENT IMPACTS

- Studies to optimize seedling performance by comparing stock size, planting window, and use of drought condition treatments in the nursery are being conducted.
- An investigation into nucleation planting strategies for ponderosa pine post-fire reforestation efforts is purposed to understand what combinations promote greater survival and growth for individual ponderosa pine seedlings. A similar investigation is being conducted for aspen planting densities.
- Assessment of log and snag microsites for reforestation of aspen in a post-fire environment aims to understand the influence of log and snag microsites on outplanted aspen seedling performance.
- A study is being conducted to compare planted ponderosa pine seedlings under an interaction of animal protection methods and vegetation management intensities to improve reforestation success. This research will examine the cost-effectiveness of these treatments.
- An investigation into physiological and morphological responses of *Pinus ponderosa* seedlings to moisture limitations in the nursery and their implications for restoration was conducted. This study assessed, to a limited extent, the potential interactions between seed source and water limitations in nursery production.
- A *pinus ponderosa* carbon modeling and provenance test was conducted to assess effects of climatic changes across 75 sources of ponderosa pine on survival, growth, physiological parameters, and carbon sequestration over 10 years of growth.

COMMUNITY OUTREACH

The JTH FRC offers a unique educational opportunity to learn about forestry research and the importance of forests to not only agricultural production in NM, but also how forests provide water, wildlife habitats, and so many other benefits to the state. The annual field day is an event open to the public to visit the Center and get an up-close look at the seedling nursery and ongoing reforestation efforts.

Results from research conducted at the JTH FRC are used to inform land managers throughout the western US on reforestation strategies that improve seedling survival and growth. Local communities around Mora, NM, that are impacted by the recent fires in 2022 will benefit from this research due to the added value it has on many ecosystem services that reforestation has on water, recreation, wildlife, timber, and many other valuable resources.

