

Nurseries Have a Critical Role in Meeting Forest Restoration Goals

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Overview:

- Meeting forest restoration goals requires establishment and growth of seedlings that can thrive for many decades. Often, this requires use of nursery-grown plants. Despite their obvious role, however, nurseries can be considered a low priority and/or overlooked during the planning process.
- During the past 20 years, staffing and resources have declined for state and federal nurseries, resulting in decreased capacity. At the same time, forest disturbances from wildfires, pests, pathogens, and invasive species have increased. Thus, a renewed focus on nursery capacity and resources is needed.
- Meeting forest restoration goals in a timely and effective manner requires a keen understanding of nursery practices and target seedling characteristics as they relate to outplanting performance along with close communication and collaboration with nursery personnel.

Summary:

Quality, nursery-grown seedlings matched to the outplanting site are necessary to meet national forest restoration goals. Seedling needs have increased during the past decade as a result of forest disturbances and expanding restoration goals. Additionally, new legislation is aimed toward addressing current reforestation backlogs as well as future planting needs. Thus, nursery production capacity is expected (and necessary) to increase seedling supplies.

The role of forest nurseries is to provide sufficient quantities of high-quality seedlings in a timely manner. Nurseries also help to ensure appropriate species and genetic sources are available for various geographic zones and serve as sources of plant and environmental expertise. Many nurseries also maintain seed banks and/or seed orchards. To operate a nursery efficiently and effectively, nursery personnel must have in-depth expertise on many factors including: biology, genetics, and growth patterns of each species from seed to seedling; culturing practices (e.g., irrigation and fertilization) for establishment, active growth, and hardening growth stages designed to meet morphological specifications and delivery dates for a multitude of seed sources, stocktypes, and customers; soil/growing media properties;

environmental influences; prevention and management of insects and diseases; equipment operations; and much more.

Recognition and understanding of the critical role of nurseries is imperative to coordinate the necessary resources and efforts for scaling up tree planting to meet current and future forest restoration goals. Overlooking this critical aspect of the reforestation pipeline can have long-term economic and environmental consequences.

Silvicultural Concepts:

- Successful forest restoration with nursery-grown seedlings depends on selection of target seedlings that have the best potential to perform well after outplanting. Thus, the forest manager/silviculturist must have a good understanding of nursery production processes and target seedling specifications as they relate to post-planting survival and growth.
- Applying the Target Plant Concept (fig. 1) ensures the right plants are planted on the right site at the right time. This process includes communication between the land manager and the nursery manager to determine the best seedling species, stocktype, genetic source, and other characteristics that are matched to the designated outplanting site.

Management Applications:

- While natural regeneration and direct seeding can meet a portion of reforestation goals, the use of nursery-grown seedlings is necessary in many areas to ensure adequate stocking density and distribution. Thus, nursery production practices and capacity must be considered in the planning process.
- Foresters involved in reforestation activities need to understand the nursery production cycle so they can make informed and timely decisions regarding stock for their sites. A basic understanding of nursery propagation activities as related to plant physiology, morphology, phenology, genetics, and ecotype is vital for working effectively with nursery staff, setting target specifications, and troubleshooting variations in field performance.
- Frequent and clear communication with nursery personnel and visits to the nursery to observe the growing stock can facilitate production and delivery of seedlings best suited for the outplanting site (fig. 2). This communication can also serve to identify bottlenecks, quality issues, timing concerns, or other factors that can be adjusted to improve future crops.



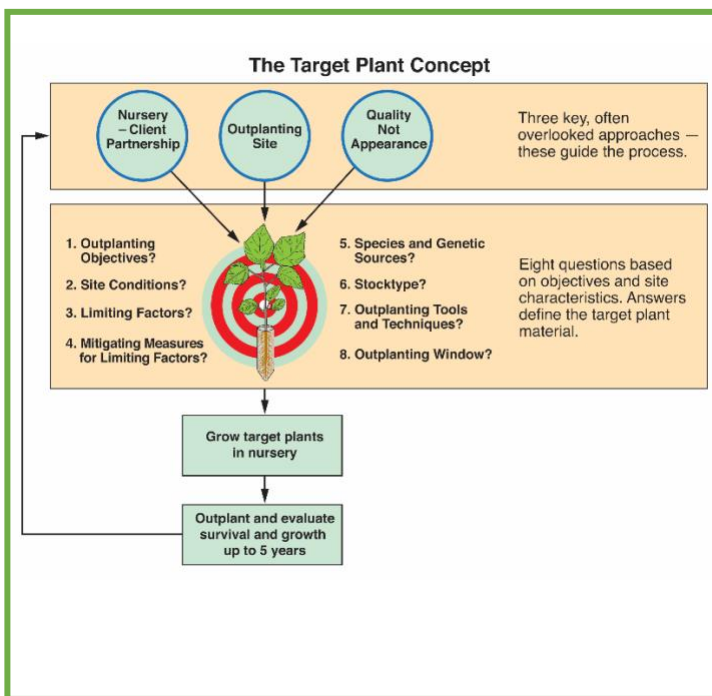


Figure 1—The Target Plant Concept guides nursery and land managers on decisions regarding the best plant materials for a given outplanting site.



Figure 2—On-site visits to examine stock quality, discuss production schedules, and improve understanding of nursery processes are invaluable to foresters.

References

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