



## Reforestation: Fast Facts

- Forests capture approximately 15% of the country's annual emissions
- **Reforestation:** the process of replanting an area with trees post-disturbance, e.g., after wildfires, other natural disasters, or land conversions.
- Why do we need reforestation?
  - Critical for maintaining and re-establishing forest cover and resilience.
  - Reforestation success is dependent on the resilience of our current forests and their ability to provide suitable conditions for the next generation of trees.
- Define **resilience:** our forests' ability to withstand large-scale disturbance events and provide current and future benefits for generations to come.
- Forests are **carbon sinks**, meaning they pull out carbon from the atmosphere and physically store it. However, if improperly managed, they can become **carbon sources** and release carbon back into the atmosphere.
- Reforestation challenges:
  - Suitability of the soil, competing shrub growth, drought, herbivory, distance to seed source, and immediate weather events
  - Climate change is exacerbating (and exacerbated by) natural disasters like large-scale wildfires.
- Natural regeneration is preferred because:
  - Seed sources are site specific
  - May have best chances of survival
  - Cost effective
- But conditions may not always allow for natural regeneration. Wildfires can often wipe out seed producing trees
- Advantages of planting:
  - We can select the seed source
  - We can evaluate quality of seedling
  - We can select the best conditions to plant in
- Monitoring reforestation is important so we can see how seedlings respond to different site conditions over time
- Dynamic ecosystems require dynamic solutions. So what else can we do?
  - Need to scale up the work with fire prevention
    - Prescribed fires
    - Mechanical thinning
    - Reduce fuel loads
  - Invest in research
  - We must build resilience into young stands
- Many current reforestation strategies include planting in straight parallel lines to maximize tree crops—"pines in lines." However, this strategy leads to tree density 3-5 times the density of the ecosystem's natural state. As a result, the trees grow too rapidly, their branches overlap, and they outcompete the



shrubbiness on the ground. The lack of species diversity and the dense replanting also leaves the new stand more vulnerable to future wildfires and forest pest infestations.

- To prevent these issues, we can:
  - Vary the pattern of planting to avoid uniform spacing
  - Vary the tree species planted
  - Plant seed producing trees in remote, inaccessible areas
- After planting: make sure ecosystem processes, like surface fires, are restored
  - Low severity surface fires will help re-establish selective mortality. E.g., it will weed out the weaker trees and favor the stronger ones that will last over time
- **Reforestation pipeline:** A four step process to reforestation
  1. Seed collection and storage: select a supply of diverse, climate-adapted seeds.
  2. Nursery: nursery production needs to more than double to meet half of total opportunity; 90% of the ability to scale-up is in the South and Pacific Northwest.
    - a. Labor shortages are a top challenge, as is lack of investment in nursery research.
  3. Tree planting: prepare site and complete environmental reviews.
  4. Post-planting: regularly monitor the new stand and maintain it with methods such as prescribed fires and mechanical thinning.