



# Growing Loblolly Pine for Profit

## *Productivity and Financial Implications of Three Pine Competition Control Prescriptions*

Forestry Topic 33

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The Virginia Department of Forestry established a research study at the Appomattox-Buckingham State Forest in 2005-07<sup>1</sup> to compare pine volume growth and possible financial returns based on three different loblolly pine reforestation practices:

- ◆ Tree planting on a prescribed burned tract with no vegetative competition control
- ◆ Tree planting on a prescribed burned tract but with “release” herbicide competition control in the second growing season
- ◆ Herbicide site preparation treatment in early fall prior to planting

## Results

The study area was re-measured at age 10, with a summary of results below. Actual growth and financial returns on a particular stand of trees is dependent on many factors, such as soils, timber prices and interest rates. The study shows that:

- ◆ Herbicide release at age two increased volume by 55 percent over planting with no herbicide
- ◆ Herbicide site preparation doubled volume growth compared to simply planting
- ◆ Herbicide site preparation treatment is financially better than both of the other treatments
- ◆ Herbicide site preparation is financially better, even if planting has to be delayed or “set out” for a year

The results are shown in Figures 1 and 2.

## Volume Growth

The volume is shown in cubic feet of wood generated by the stand and shows how the release and herbicide site preparation treatments positively affect volume. The growth at age 10 helps to project future growth, using a growth and yield model.<sup>2</sup> With this, we can “grow” the stand to future ages and predict expected yields. Many wood users and landowners may be more familiar with tons per acre. And, many owners are interested in how much their stand grows in a year. The annual growth rate of the stand was projected at age 15 below, again showing the increasing volume associated with the three different treatments.

Treatment	Volume
Plant Only	= 3.3 tons per acre per year
Plant and Release Spray	= 5.1 tons per acre per year
Herbicide Site Preparation and Plant	= 6.1 tons per acre per year

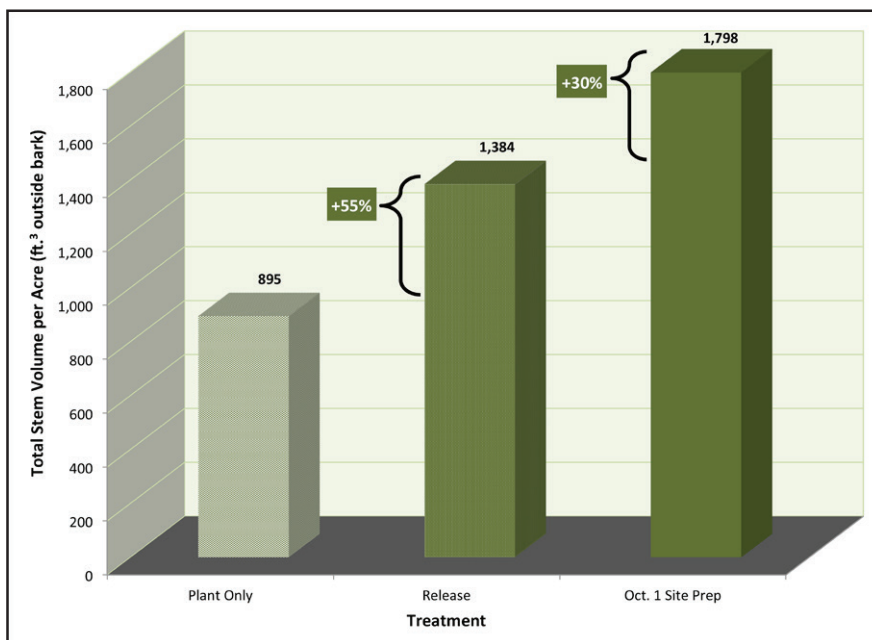


Figure 1: Age 10 loblolly pine volume comparison

# Growing Loblolly Pine for Profit

## Financial Projections

With projected growth and yield of the stand, we can predict financial returns. In order to do this, we estimated wood prices, an interest rate and length of time<sup>3</sup>. The measure used to compare these is present value. The concept is to consider revenues from timber at the years they occur and then discount them (just the reverse of compound interest) back to the present time. Figure 2 shows the results for the three different treatments for lengths of time that maximized present net value.

Treatment	Revenue
Plant Only	= \$388 / acre (age 24)
Plant and Release Spray	= \$576 / acre (age 23)
Herbicide Site Preparation and Plant	= \$686 / acre (age 22)

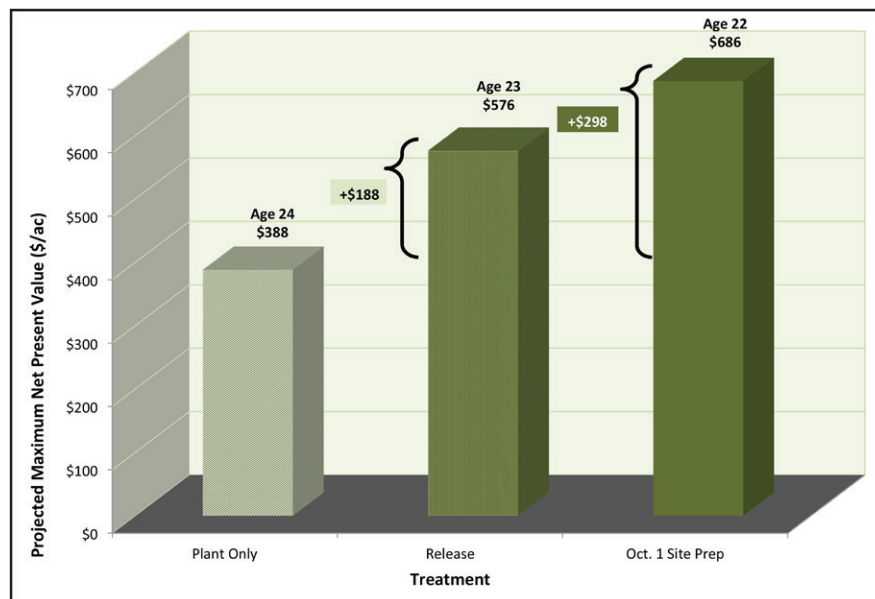



Figure 2. Projected present value (\$/acre) resulting from different competition control and thinning scenarios

## Timing of Practices

Some landowners may comment: I understand that herbicide site preparation is better, but I'd rather not wait to plant and "lose" a year of growth. Depending upon timing since completion of harvest, the forester may advise to wait until the following season to do herbicide site preparation work, which may put tree planting into the following year. Using our growth projections and financial analysis, we find that any treatment that increases present value by at least \$40 per acre would justify laying over a year. In our example, herbicide site preparation increases the present value by \$110 per acre over the first year planting and release, and would be justified. Additionally, note that the peak of present value for the herbicide site preparation treatment occurs at age 22 versus age 23 for the plant and release option.

- <sup>1</sup> Creighton, Jerre, Research Program Manager, Virginia Department of Forestry, "Site Prep vs. Release for Woody Competition Control in Loblolly Pine: 10-Year Growth and Projected Financial Returns," Research Report #130, December 2016. [http://www.dof.virginia.gov/infopubs/\\_research-reports/RR-130.pdf](http://www.dof.virginia.gov/infopubs/_research-reports/RR-130.pdf)
- <sup>2</sup> Ptaeda 4.1 growth-and-yield model developed by the Virginia Tech Forest Modeling Research Cooperative. <http://www.fmrc.frec.vt.edu/models.htm>
- <sup>3</sup> Financial variable inputs: 6% interest/discount rate; site quality (index) – 65 (feet tall) at age 25; Prices from Timber Mart South© 3rd qtr. 2016, price per green ton: pulpwood – \$14.35, chip-n-saw – \$18.02, sawtimber – \$20.31, no thinning revenue.



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