# Grow CRP Trees to Financial Maturity

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## Introduction

Landowners are asking, "What is my stand of Conservation Reserve Program pines worth?" To find the answer, we examine average tree growing scenarios from several perspectives. The wood-flow of common CRP stands is examined. Then, a financial analysis of the same tree enterprises is presented. Finally, the value of thinnings and final harvests for specific years is calculated. These examinations should give landowners an understanding that tree growing in Georgia can be a profitable experience.

Two common tree-growing scenarios that apply to CRP tree crops, 20-year pulpwood and 33-year multiple product rotations, are examined here. Each scenario is examined for two pine species, slash (*Pinus elliottii Engelm.*) and loblolly (*Pinus taeda L.*). To simplify the examples, pulpwood rotations are shown without thinnings, Table 1. Multiple product rotations are thinned at years 18 and 25 with a clearcut at year 33, Table 2. In addition, examples are shown for different levels of land productivity, Site Index (SI) of 60, 65, and 70 feet at a base age of 25 years.

## Wood-flow performance

From the wood-flow information presented in Tables 1 and 2 you can see that the longer rotations produce more total volume of wood. See also that loblolly out-produces slash pine on most sites. In addition, land with a higher site index, i. e. higher productivity, produces more wood than land with a lower site index. Landowners may choose between growing trees for a longer or shorter rotation depending upon their individual situations. Relatively shorter, pulpwood rotations are more common in south Georgia. Longer, multiple product tree rotations are more common in Piedmont Georgia.

## Financial performance

We also make a comparison between the financial performance of the examples shown in Tables 1 and 2. The pulpwood rotations are shown in Table 3. The longer, multiple product rotations are shown in Table 4.

As with the wood-flow comparisons, the financial performance of the longer, multiple product rotations is greater than the shorter, pulpwood rotations. Tree growers can generally earn higher returns with longer rotations. The trade-off is that you must wait longer to make more money from growing trees. Again, individual landowner preference or selection of a financial planning period is the key to deciding on a longer or shorter tree rotation.

Notice in Tables 3 and 4 that loblolly out-performs slash, and more productive land out-performs land with a lower site index. You can choose between growing slash or loblolly pines, but the site index comes with the land you have. Improving site index, soil productivity, is possible but expensive. It usually involves

1998. Grow CRP Trees to Financial Maturity. Georgia Cooperative Extension Service, College of Agricultural and Environmental Sciences, The University of Georgia, Athens, GA 30602 U. S. A.

1998. The Entomology and Forest Resources Digital Information Work Group, College of Agricultural and Environmental Sciences and Warnell School of Forest Resources, The University of Georgia, Tifton, Georgia 31793 U. S. A. BUGWOOD 98-203

http://www.bugwood.caes.uga.edu

fertilization or soil structure improvement (subsoiling). So, it is important to examine your particular land carefully to determine if it is better suited for slash or loblolly. You also need to know its productivity for growing trees. A forester can help you with these decisions and also give details on identifying slash and loblolly sites.

Net present worth **(NPW)** is calculated with revenues discounted to present year less costs discounted to present year at the discount rate of 8 percent. A net present worth value greater than zero indicates that at least the discount rate is being earned on the investment.

Internal rate of return **(IRR)** is the interest rate at which discounted revenues equal discounted costs. It assumes that all intermediate revenues are reinvested into the project. The project is considered profitable if the internal rate of return exceeds the discount rate.

Annual equivalent value **(AEV)** is the net present worth expressed as an annuity over the planning horizon, computed at the discount rate used. Annual equivalent value is a useful measure for comparing investments over unequal time periods.

## Wood-flow value

Forest landowners often ask, "What will my trees be worth when they get old enough or big enough to harvest?" To answer this question, we have estimated both the value a thinning would bring and the value of the total stand if clearcut, for years 15 and 20. These values are shown in year 2001 and 2006 dollars in Table 5.

The information in Table 5 shows that CRP plantations will yield considerable dollar returns per acre when held to at least 15 years of age. In some situations, these tree stands could be thinned earlier than year 15, possibly as early as year 13. In the case of thinnings, landowners will not have to wait long after their CRP payments end to begin earning cash-flow payments from their tree crops. After the initial thinning, additional thinnings could be made every 5 to 10 years until tree age 35 to 40.

**Table 1**. Planted pine wood-flow projections for 20-year, un-thinned pulpwood rotations, Coastal and Piedmont Georgia.

| Species Harvested | Site Index Base Age = 25 | Volume |
|---|---|---|
| | --------feet-------- | --cords-- |
| Slash | 60 | 29 |
| | 65 | 35 |
| Loblolly | 60 | 37 |
| | 65 | 43 |
| | 70 | 49 |

**Table 2.** Planted pine wood-flow projections for 33-year, multiple product rotations, Coastal and Piedmont Georgia (Site Index (SI) is for base age = 25 years).

| | | Total Volume | | | Volume Harvested | | |
|---|---|---|---|---|---|---|---|
| **Species** | **SI** | **Yr. 18** | **Yr. 25** | **Yr. 33** | **Yr. 18** | **Yr. 25** | **Yr. 33** |
| | | ----------feet---------- | | | ----------cords---------- | | |
| **Slash** | 60 | 24 | 33 | 41 | 8 | 4 | 29 |
| | 65 | 29 | 38 | 46 | 11 | 4 | 31 |
| | 70 | 35 | 44 | 55 | 15 | 5 | 32 |
| **Loblolly** | 60 | 32 | 44 | 55 | 15 | 8 | 32 |
| | 65 | 37 | 50 | 62 | 19 | 9 | 34 |
| | 70 | 43 | 57 | 69 | 22 | 10 | 37 |

**Table 3.** Planted pine financial performance projections for 20-year, un-thinned pulpwood rotations, Coastal and Piedmont Georgia (Site Index (SI) is for base age = 25 years. Cash-flow is shown in uninflated (1986) dollars).

| **Species** | **SI** | **NPW** | **IRR** | **AEV** | **Cash-Flow** | |
|---|---|---|---|---|---|---|
| | | **feet** | **$/A** | **%** | **$/A/yr.** | **$/A** |
| **Slash** | 60 | 26 | 9.1 | 3 | 222 | |
| | 65 | 75 | 10.7 | 8 | 338 | |
| | 70 | 137 | 12.4 | 14 | 482 | |
| **Loblolly** | 60 | 94 | 11.3 | 10 | 381 | |
| | 65 | 147 | 12.6 | 15 | 506 | |
| | 70 | 209 | 13.8 | 21 | 650 | |

**Table 4.** Planted pine financial projections for 33-year, multiple-product rotations, Coastal and Piedmont Georgia (Site Index (SI) is for base age = 25 years years. Cash-flow is shown in uninflated (1986) dollars).

| Species | SI | NPW | IRR | AEV | Cash-Flow |
|---|---|---|---|---|---|
| | feet | $/A | % | $/A/yr. | $/A |
| **Slash** | 60 | 79 | 9.8 | 7 | 630 |
| | 65 | 147 | 11.1 | 13 | 839 |
| | 70 | 228 | 12.3 | 20 | 106 |
| **Loblolly** | 60 | 267 | 12.7 | 23 | 1193 |
| | 65 | 356 | 13.7 | 31 | 1447 |
| | 70 | 465 | 14.7 | 40 | 1757 |

**Table 5**. Planted pine cash-flow projections per acre for 20-year, thinned pulpwood rotations, Coastal and Piedmont Georgia (Site Index (SI) is for base age = 25 years. Dollars reported are inflated to year shown).

| | | Total Value/A | | Value Harvested/A | |
|---|---|---|---|---|---|
| Species | SI | Yr.15 | Yr.20 | Yr.15 | Yr.20 |
| | feet | (2001 $s) | (2006 $s) | (2001 $s) | (2006 $s) |
| **Slash** | 60 | 511 | 842 | 152 | 661 |
| | 65 | 643 | 1033 | 238 | 750 |
| | 70 | 786 | 1287 | 449 | 887 |
| **Loblolly** | 60 | 741 | 1376 | 347 | 965 |
| | 65 | 891 | 1646 | 452 | 1108 |
| | 70 | 1054 | 1968 | 566 | 1295 |