

Appendix C – Vegetation Report Boswell Creek Healthy Forest Initiative Project

Forest Vegetation Simulator

Description

The Forest Vegetation Simulator (FVS) is an individual tree, distance-independent growth and yield model. Important model variables include physiographic region, forest type, species, and site index. FVS can simulate a wide range of silvicultural treatments. The southern variant used to model the stands uses Forest Inventory and Analysis (FIA) data from Virginia, North and South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, Tennessee, Kentucky, Arkansas, Texas, and Oklahoma to predict stand growth.

Simulations were run for young pine stands with basal areas of 100 square feet per acre and 150 square feet per acre. The data entered in FVS was collected from the stands in the winter of 2003. The Interdisciplinary Team identified stands representative of moderate (81-120 BA) and high (>120 BA) Southern Pine Beetle (SPB) hazard and ran simulations to compare stand development under the no action and proposed action alternatives. The simulations were run for a 20-year period under two scenarios, thinning or no thinning. The first scenario contained no thinning and allowed the stands to naturally develop for 20 years. The second scenario contained thinning, which removed the smallest commercial pulpwood and lowered the basal area to 70 square feet per acre.

Results

The FVS simulations show that thinning will lower the SPB hazard from high to moderate. In stands where the SPB hazard is moderate, such as stand 4 of Compartment 74, thinning will help to keep the stand in the moderate hazard range. In 10 years, the stand will have a basal area of 115 square feet per acre. If the stand is not thinned, in 10 years the stand's basal area will grow to 151 square feet per acre, which puts it in a high SPB hazard. The FVS simulations also show that thinning will help keep mortality low.

The following tables compare the stand characteristics of thinning versus not thinning. Pages 3 and 4 show how the stands might look in the future.

C-74, Std. 4 in 2003		
	No Thin	Thin
Age:	15 yrs.	15 yrs.
Avg. dbh:	6.5 in.	6.7 in.
Trees/ac:	437	284
BA:	100	70
Height:	54.3 ft.	54.3 ft.
Mortality	2 trees/yr.	2 trees/yr.

C-73, Std. 21 in 2003		
	No Thin	Thin
Age:	15 yrs.	15 yrs.
Avg. dbh:	6.9 in.	7.8 in.
Trees/ac:	580	209
BA:	150	70
Height:	58.1 ft.	58.1 ft.
Mortality	19 trees/yr.	2 trees/yr.

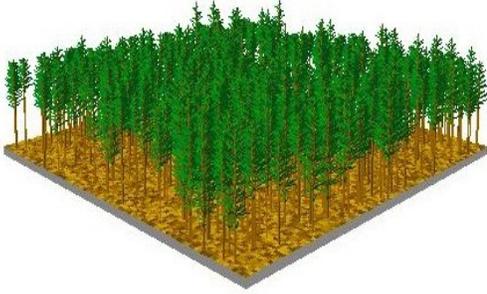
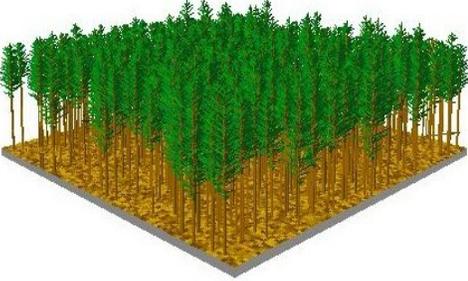
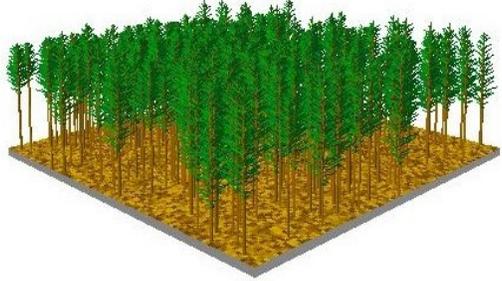
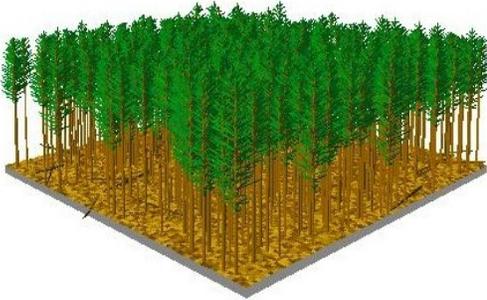
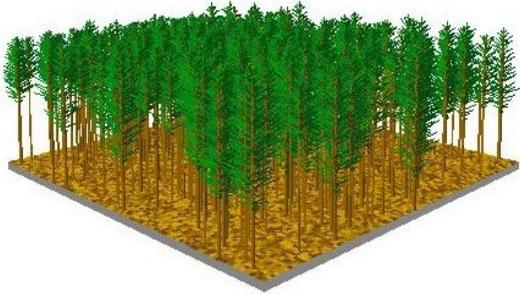
C-74, Std. 4 in 2013		
	No Thin	Thin
Age:	25 yrs.	25 yrs.
Avg. dbh:	8.2 in.	8.7 in.
Trees/ac:	413	279
BA:	151	115
Height:	65.8 ft.	65.8 ft.
Mortality	36 trees/yr.	4 trees/yr.

C-73, Std. 21 in 2013		
	No Thin	Thin
Age:	25 yrs.	25 yrs.
Avg. dbh:	8.3 in.	9.9 in.
Trees/ac:	522	205
BA:	196	109
Height:	72 ft.	71.7 ft.
Mortality	34 trees/yr.	21 trees/yr.

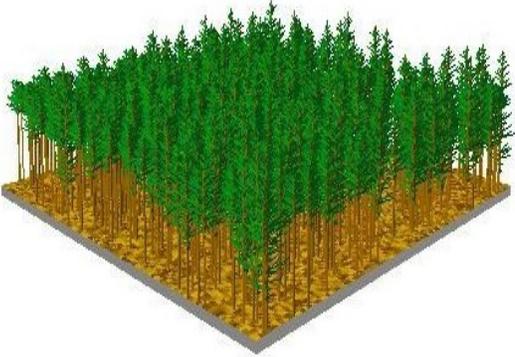
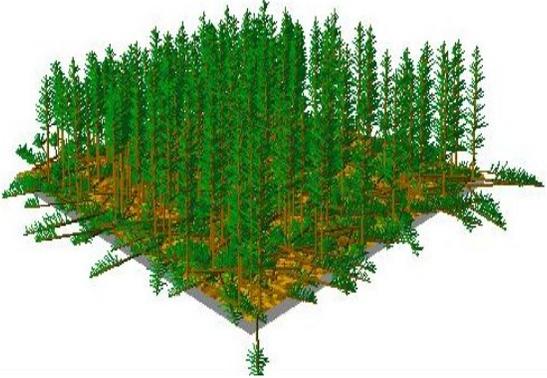
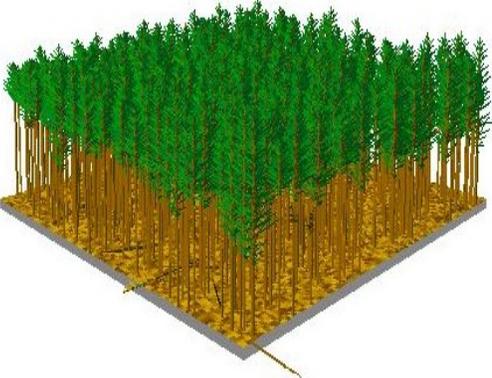
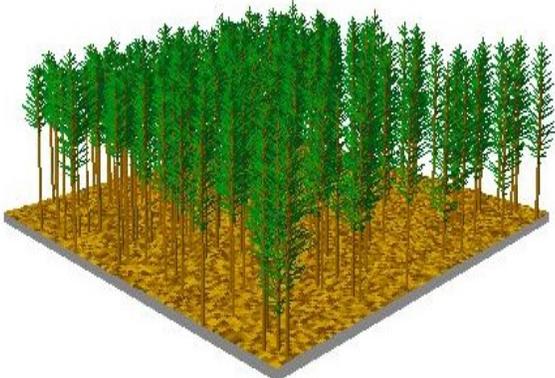
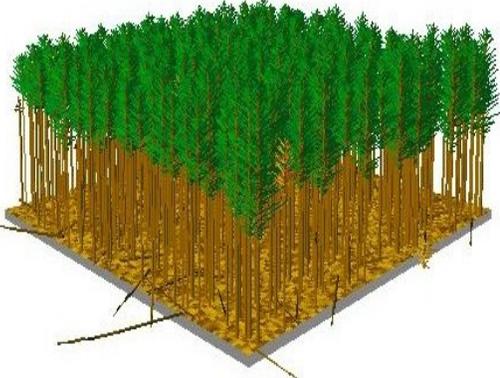
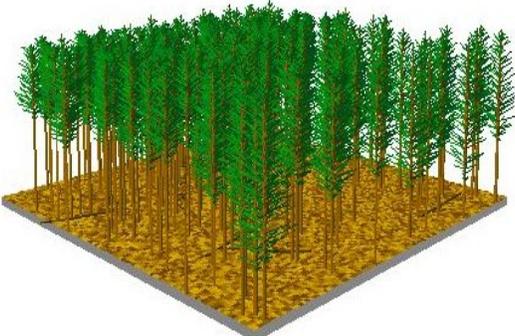
C-74, Std. 4 in 2023		
	No Thin	Thin
Age:	35 yrs.	35 yrs.
Avg. dbh:	9.6 in.	10.3 in.
Trees/ac:	365	262
BA:	183	152
Height:	74 ft.	73.9 ft.
Mortality	69 trees/yr.	42 trees/yr.

C-73, Std. 21 in 2023		
	No Thin	Thin
Age:	35 yrs.	35 yrs.
Avg. dbh:	9.5 in.	11.6 in.
Trees/ac:	472	190
BA:	231	139
Height:	82 ft.	81.7 ft.
Mortality	84 trees/yr.	34 trees/yr.

Comparing Effects of Thinning to Not Thinning
using the
Forest Vegetation Simulator's Stand Visualization System
Compartment 74, Stand 4

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Comparing Effects of Thinning to Not Thinning
using the
Forest Vegetation Simulator's Stand Visualization System
Compartment 73, Stand 21

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* number of trees dying per year