The SumaGrow advantage for Forestry

The use of Tall Timber with SumaGrow inside on a pine plantation trial in Southern Mississippi

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What is Tall Timber with SumaGrow inside?

- Tall Timber with SumaGrow inside is a poly-microbial blend of native microbes designed to work in harmony with the environment as well as the needs of todays forest managers and conservationists.

What can Tall Timber with SumaGrow inside do for me?

- Accelerated growth
- Increased tree quality
- Increased tree vigor
- Decreased cost over traditional fertilizers to attain similar growth rates
- Decreased dependency on inherent site quality for production
- Decreased need for competition control - such as Herbaceous Weed Control

What are the short and long term benefits of using Tall Timber with SumaGrow inside?

- Decreased need for competition control = Lower cost of management because the trees grow faster
- Decreased tree fertilization costs vs. traditional 100 % NPK (DAP) rates
- Ability to open up what could be considered marginal forestry sites = Trees can grow better for less on marginal land – The ability to use land previously unsuitable for forestry for less
- Possibility of decreased time from establishment to harvest 1-10 years depending on site productivity

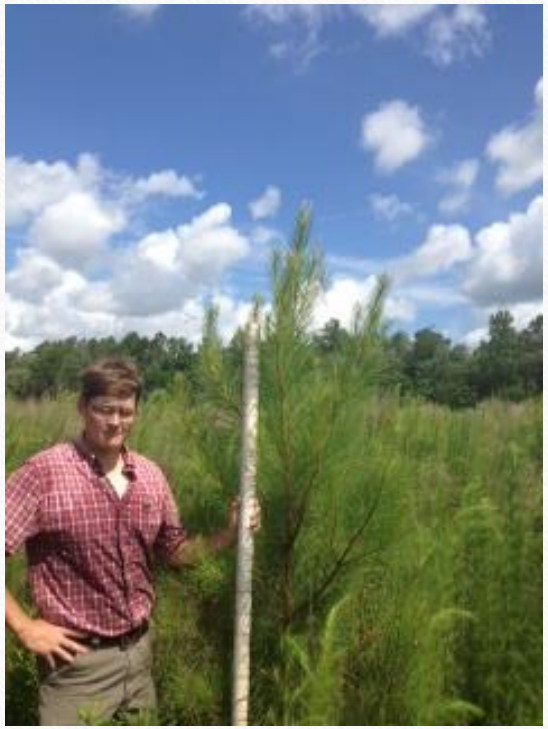
Southern Mississippi Pine Trial

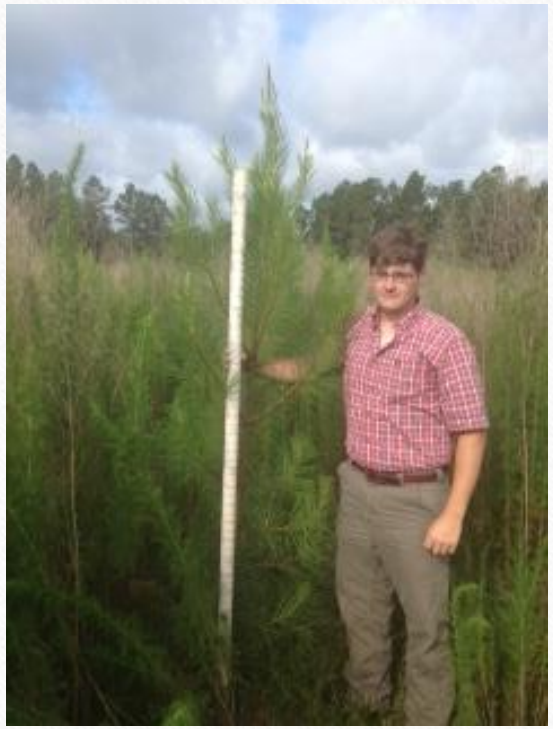
- North Western Hancock County, Mississippi
- 30 acres total site
- 14 acres treated with Tall Timber with SumaGrow inside at varying concentrations
- 550 trees per acre
- ArborGen Second Generation improved Loblolly Pine seedlings
- Concentration Gradients: 2.0,4.0,6.0,8.0,10.0,12.0,14.0 and Control
- Seedlings were dipped in a 5 gallon bucket containing the concentrate and sent to be planted
- Site Index around 70, base age 25 (trees expected to be 70' tall at 25 years old)

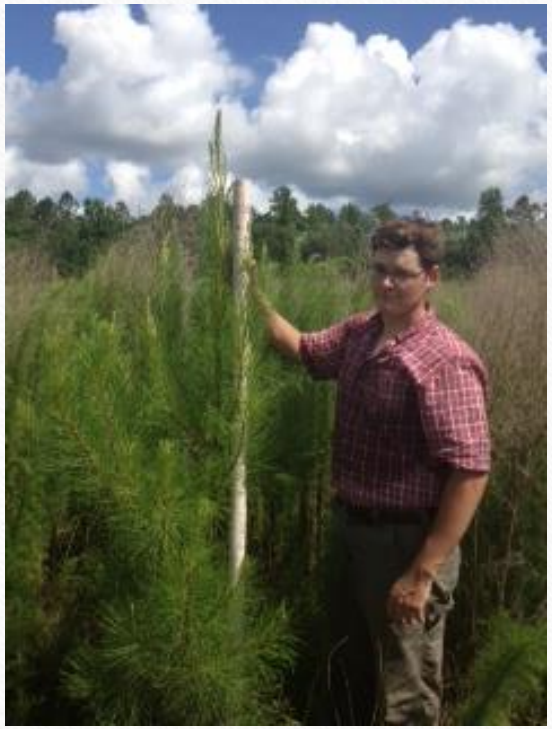
Pictures

Tall Timber with SumaGrow inside treated at 14.0 oz/gallon 6-9-2014

Pole is 6.2’ tall!



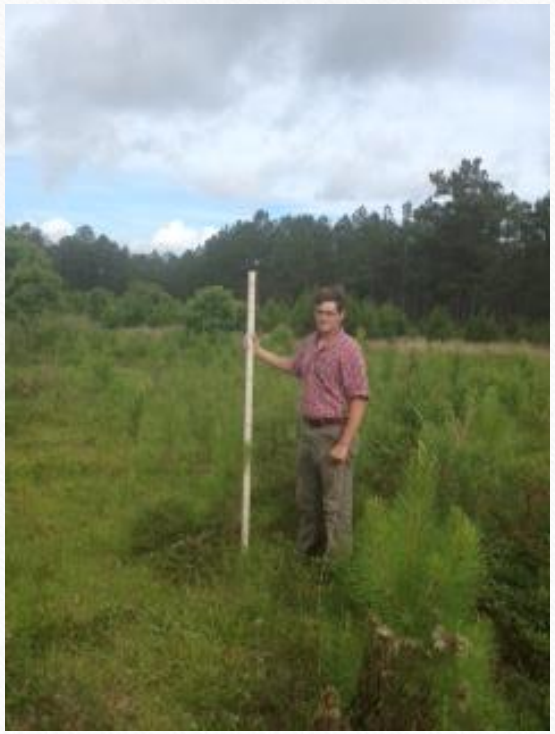


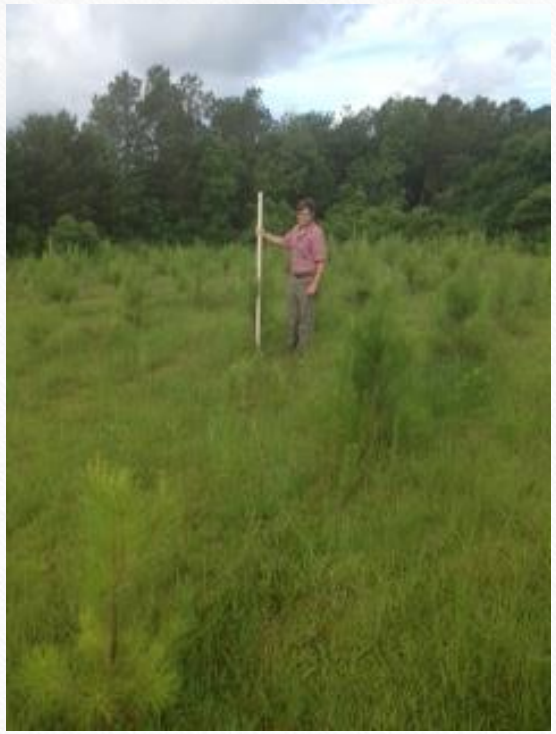


Pictures (continued)

Control

The results speak for themselves!





Growth Table

Average Concentration Gradient Growth							
Concentration		**Total Height**	**Total Height**	**Total Height**	**Total Height**	**First Growing Season**	**Growth in 408 Days**
		4/24/2013	7/10/2013	10/29/2013	6/6/2014	4/24/ to 10/29/2013	4/24/2013 to 6/6/2014
oz/gallon		*1/10ths of ft.*	*1/10ths of ft.*	*1/10ths of ft.*	*1/10th of ft.*	*1/10ths of ft.*	*1/10ths of ft.*
2		0.85	1.375	2.178	3.768	1.328	2.918
4		0.882	1.386	2.02	3.575	1.138	2.693
6		0.859	1.261	1.818	3.19	0.959	2.331
8		0.877	1.462	2.487	4.36	1.61	3.483
10		0.93	1.409	1.92	3.485	0.99	2.555
12		0.967	1.548	3.263	5.55	2.296	4.583
14		0.91	1.535	3.112	5.57	2.202	4.66
Control		0.926	1.302	1.989	4.12	1.063	3.194

Growth Explained

- You will of no doubt noticed the impressive growth from the Tall Timber with SumaGrow inside treated trees
- It is customary for pines to have increased growth as young trees, especially from two to three years old. The first year (establishment) is typically composed of a tree getting over the shock of being up-rooted and planted. The first year is normally marked by root and needle production along with some growth. Years two and three are major growth years as a natural process to get the tree ahead of its competition

Growth Explained (continued)

- The higher concentrations (12.0 and 14.0 oz./gallon) of Tall Timber with SumaGrow inside have shown **significant growth in the first year of an astounding 1.123 feet AHEAD of the control**
- There is **continued exceptional growth** in **2014** with some **trees** being **in excess of 7 feet tall**
- You will also notice decreased total height in concentration gradients of 6.0,8.0 and 10.0 oz./gallon. 6.0 fell in a pond drain/overflow (pine does not grow in inundatated soil!) and 8.0 and 10.0 fell in a overly compacted road bed

Growth Explained (continued)

- Despite decreased total height in the 6.0, 8.0 and 10.0/oz. gallon plots, overall growth per gradient is still in an area of 1 foot new growth in the first year coupled with impressive second year growth despite challenging conditions. ***This is more growth than could be expected from untreated trees***. The increased root/needle production has a key role in these situations.
- Expected total average height for 12.0 and 14.0/oz. gallon trees is around 6.5-7.0 feet by dormancy 2014 (Thanksgiving) with many trees reaching 8-8.5 feet
- Expected total average height for control trees is around 4.75-5.0 feet by dormancy 2014

Cost/Benefit Analysis

Lets assume these figures are held constant

- Land = **100,000** acres
- Trees per acre = **550**
- Establishment year = **2015**
- Seedlings cost = **$0.05 each**
- Site preparation per acre cost = **$130.00** (Lucas and Alig, 2006, p. 17)
- Tall Timber treatment at 14.0/oz. gallon per acre cost = **$11.14** (1 gallon treats 1,925 trees at 14.0/oz. per gallon for $39.00 per gallon)
- Establishment fertilizer average per acre cost = **$87.03** (Dooley and Barlow, 2013, p. 4)
- Pine bare root planting crew per acre cost = **$54.66** (Dooley and Barlow, 2013, p. 3)

Cost/Benefit Analysis (continued)

- Establishment Cost: No treatment ($0) = **$21,216,000.00**
- Establishment Cost: Tall Timber treatment ($1,114,000.00) = **$22,330,000.00**
- Establishment Cost: fertilizer treatment ($8,703,000.00) = **$29,919,000.00**
- **That is an added initial cost of $7,589,000.00 to use conventional establishment fertilizers over Tall Timber with SumaGrow inside!**

Cost/Benefit Analysis (continued)

- Herbaceous Weed Control per acre cost (*not needed on Tall Timber sites because of pre-treated seedlings outgrowing the competition*) = $50.74 (Dooley and Barlow, 2013, p. 4)
- Release (woody plant competition control) per acre cost (*most likely not needed on Tall Timber applied sites because of tree growth*) = $31.97 (Dooley and Barlow, 2013, p. 4)
- Lets say Herbaceous Weed Control is required on 40% of this tract and a Release is required on 15% of this tract as well
- Herbaceous Weed Control cost (aerial) = **$2,029,600.00**
- Release Cost (aerial) = **$479,550.00**

Cost/Benefit Analysis (continued)

- With the scenario presented there is a real possibility (every site is unique) of prolonged decreased production and mortality as a forest manager if proper steps are not taken to control the competition present within this tract; a total additional cost of **$2,509,150.00** if competition control is implemented
- The establishment cost of the non treated site coupled with the completion control is $21,216,000.00 + $2,509,150.00 = **$23,725,150.00**
- There is a potential increase of **$1,395,150.00** in management costs over the next series of years for conventional no fertilization management regimes within this tract because of potentially needed competition control **when not using Tall Timber with SumaGrow inside inoculated seedlings**
- You can look for increased tons/acre/year or more depending upon site quality when using forest nutritional regimes
- With the documented growth increases provided by ***Tall Timber with SumaGrow inside***, it is very likely that you can ***match and most likely increase productivity of pine sites over traditional fertilization regimes – all while doing so for significantly less money***

Cost Benefit Analysis (continued)

We have not taken into consideration the added costs of fertilizing after the first thinning (year 12-15) at $63.28/acre (Dooley and Barlow, 2013, p. 4)

Here again, Tall Timber with SumaGrow is the logical choice if you desire to add increased forest nutritional leverage to your existing stands. Although it will most likely not be needed as the trees already have the necessary foundation to continue to grow at exceptional rates due to the higher quality root system and crown

BioSoils Enhancers, INC (makers of Tall Timber with SumaGrow inside) is in the final stages of completing the formulation for a dry pelletized product that can be easily applied by helicopter to existing stands

References

- Bair, Lucas S., and Ralph J. Alig. *Regional Cost Information for Private Timberland Conversion and Management*. Portland, OR: U.S. Dept. of Agriculture, Forest Service, Pacific Northwest Research Station, 2006.*United States Forest Service*. USFS, Sept. 2006. Web. Sept. 2014.
- Dooley, Eric, and Rebecca Barlow. "Costs and Trends of Southern Forestry Practices 2012." *Costs and Trends of Southern Forestry Practices 2012*(2013): 1-7. *Alabama Cooperative Extension Center*. Auburn University, Oct. 2013. Web. Sept. 2014.

Thank You