



6/11/2025

Dear Matre Forestry Newsletter Subscribers,

I hope all is well. I have not done a pure timber management newsletter in a little while, so here is one now, and since we are in a day of information overload, I will keep it as short and to the point as I can, but I will cover the bases:

Rethinking Planted Pine Spacing for Wildlife & a Changing Pulpwood Market

For years most of us foresters, in Georgia and adjoining states anyway, have been planting pines on a 12x6' spacing which is 605 trees per acre (TPA), rather than the old "plant 'em thick and cut 'em quick" 10x6 or tighter. Now, it is time to rethink the 12x6 standard as genetics have improved so much, more and more landowners are primarily interested in wildlife management, and unfortunately, because of a challenging pulpwood market in most areas.



Above: Specialty Reforestation planting for Matre Forestry Consulting, Inc. in Randolph County GA on 2022 on a 12x6' spacing. Photo credit: Mike Matre.

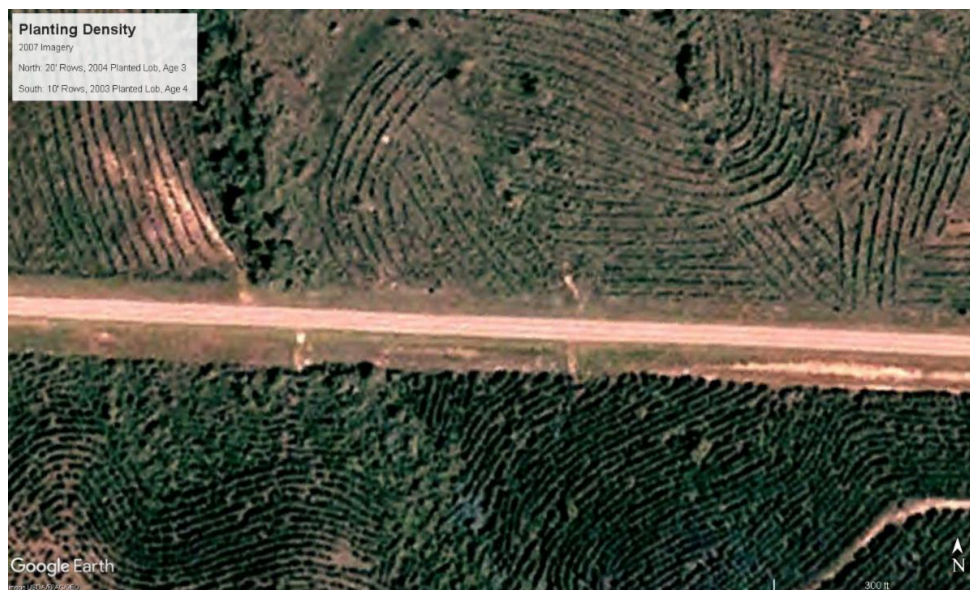
Regarding the above 2022 picture, It isn't normal to catch the dozers so close together, but they had just resumed planting after lunch, presenting me with a unique picture opportunity. Now in 2025 with the GP Cedar Springs mill close to the tract closing soon, a wider planting spacing with even better seedlings sure would be nice. I recently spoke with Jay Chupp, owner of Specialty Reforestation, on the subject and Jay said they have more and more customers going to 14 foot rows, and even 16 foot rows.

Let's take a look at why you may want to consider wider planted pine spacings:

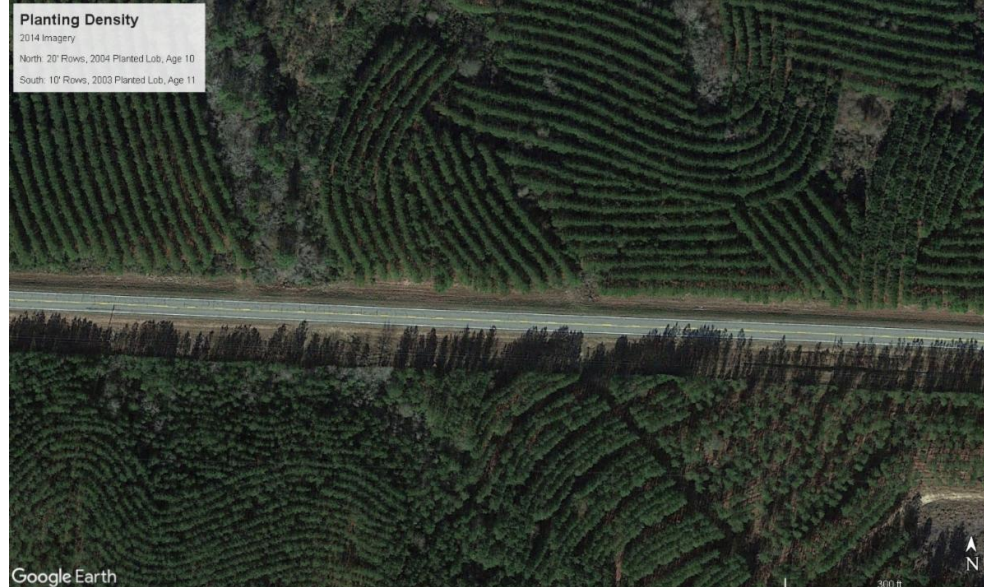
- **Genetics:** Nowadays seedling genetics have come a long way, and planted pines, especially loblolly and slash, grow so fast they benefit from some additional growing room. *Note: The wider you go on spacing, the more you need to spend on seedling quality for faster growth, superior form, self pruning, limb spacing, and limb angles.
- **Wildlife Management:** Planting on wider spacings delays and lessens crown closure, allowing for extra sunlight to reach the forest floor for additional years which promotes native wildlife browse and cover. Wider spacings also make young stands easier to hunt for additional years during the pre-merchantable, pre-1st thinning stage. Additionally, wider spacing allows for prescribed burn heat to escape the canopy better, if you plan to implement burning before the 1st thinning.
- **Managing for a challenging pulpwood market:** GP just announced the coming closing of their Cedar Springs GA paper mill, and recently closed their Perry FL paper mill. Prior to that, WestRock closed their Panama City FL paper mill. Hopefully these closures will make remaining paper mills, and other pulpwood using mills such as OSB and wood pellet mills, healthier going forward. Better yet, maybe some closed mills will be re-opened, and/or emerging markets for pulpwood trees will fill the void of closed paper mills. Regardless, the pulpwood market has struggled in recent years and may continue to struggle, so wider planted pine spacings will be advantageous compared to tighter spacings, as you will be able to delay thinnings a little longer if needed with wider spacings. Although not a great choice from a wildlife management and a stand health perspective and a cash flow perspective, with wider spacings one could grow their stands to a final clearcut without a thinning with less overcrowding than tighter spacings. Wider spacings will result in larger diameters at harvest, and with superior genetics, that means more sawtimber.
- **Cost Savings:** As mentioned above, the wider you go on planting, the more you need to spend on seedling quality for faster growth, superior form, self pruning, limb spacing, and limb angles. Wider row spacing lessens the number of seedlings planted per acre, which offsets some the higher price of superior seedlings.

Spacing and Trees per Acre. The formula is $43,560 / (\text{Row width ' X drill width '})$:

- 12x6' = 605 TPA
- 12x7' = 519 TPA
- 12x8' = 454 TPA
- 14x6' = 519 TPA
- 14x7' = 444 TPA
- 14x8' = 389 TPA
- ***20x6' = 363 TPA. 20' rows are extreme, but one of Matre Forestry's clients planted on 20' rows as an experiment in the early 2000s. See aerials below.



Above: The north half of the above 2007 aerial is ± 3 year old planted loblolly on 20' rows, and the south half is ± 4 year old planted don 10' rows.



Above: Same tract as above, seven years later. The north half of the 2014 aerial is \pm 10 year old planted loblolly on 20' rows, and the south half is \pm 11 year old planted don 10' rows. This image gives a good bird's eye view of canopy closure at age \pm 10. The south side of the picture shows almost full canopy closure on the 10' rows, with less canopy closure on the 20' rows on the north side of the aerial, yet the site is still well utilized by pines as they took advantage of more growing space provided by such wide rows.

As mentioned, above, 20' rows is pretty extreme, but the stand turned out nice. While Matre Forestry's client no longer owns the timber pictured in the aerals, I recently talked with the current owners forester, Benji Addison with Manulife Investment Management. Benji said they had a nice first thinning in the 20' row stand and because of the wide 20' rows, they did not have to take out any clearcut rows. While talking with Benji, I asked him what spacings they are currently planting, and he said they are mostly sticking to a 12' row, but often go with 8' spacing in the rows rather than 6'. He said the seedlings they are planting these days are just growing too fast for a 12x6' spacing.

The take away on this stand planted on 20' rows is that if those loblolly pines self pruned sufficiently for growing sawtimber with the genetics available in the early 2000s on such wide rows, we can certainly give today's advanced seedlings more growing room than a 12x6' spacing offers, especially in a changing pulpwood market and a stronger emphasis on wildlife management.

Seedling Costs

There is a wide range of seedling pricing available, depending on whether you buy from a public or private nursery, whether you buy bare root or container seedlings, the genetic quality you purchase, and whether you buy open pollinated or mass control pollinated. Let's take a look at the seedling cost per acre at different spacings based on spacing and hypothetical seedling costs. It is assumed that the wider the spacing, the better the seedling quality.

- 1. 12x6' bare root Open Pollinated at \$100 per 1000 seedlings = \$60.50 per acre seedling cost
- 2. 14x7' bare root Mass Control Pollinated at \$200 per 1000 seedlings = \$88.80 per acre seedling costs
- 3. 14x8' bare root Mass Control Pollinated at \$300 per 1000 seedlings = \$116.70 per acre seedling costs

Total Reforestation Costs

Let's take the above exercise one step further and look at total reforestation costs. I will use \$300 per acre other costs for the 12' spacing, and \$290 for the 14' row spacing. That's for the whole shebang, including a good rate of site prep herbicide, some money budgeted for firebreaks and burning or light mechanical work such as chopping, planting cost, and herbaceous weed treatment in the spring. I also factored in lower planting costs for wider rows.


- 1. 12x6' bare root Open Pollinated at \$100 per 1000 seedlings = \$60.50 per acre seedling cost + \$300 other reforestation costs = \$360 rounded per acre total reforestation cost
- 2. 14x7' bare root Mass Control Pollinated at \$200 per 1000 seedlings = \$88.80 per acre seedling costs + \$290 other reforestation costs = \$380 rounded per acre total reforestation cost
- 3. 14x8' bare root Mass Control Pollinated at \$300 per 1000 seedlings = \$116.70 per acre seedling costs + \$290 other reforestation costs = \$405 rounded per acre total reforestation cost

To summarize the above, my hypothetical numbers show you can plant quality seedlings on a 12x6' spacing with good site prep practices for around \$350 per acre, compared to planting the some of the

most advanced seedlings available on a 14x8' spacing, using the same quality reforestation practices, for roughly \$400 per acre. As with pricing timber, pricing reforestation is highly variable. Each site is unique and each region is unique. Site prep herbicide prescriptions and timing varies, hand planting cost differently than machine planting, different soil types and topography cost differently, and of course seedling type varies widely in cost.

Financial Performance of Different Spacings and Seedling Quality

I simulated two different regimes in a growth and yield model, with **Regime 1** being a standard 12x6' spacing with good seedlings and standard site prep methods. **Regime 2** was the same except it was a 14x8' spacing with superior seedlings. I used a Site Index 70' at age 25 for Regime 1, and a Site Index 80' at age 25 for Regime 2, with the higher Site Index being a result of superior seedling genetics. I picked the Site Index in not a hugely scientific way, but based mainly on what I have seen over the years with past stands I have managed, and what I believe to be possible when planting the most advanced seedlings on the market. To keep the comparison simple, I simulated a no thin rotation with a clearcut at age 20. In reality, most would thin at least once and grow to at least age \pm 25. With so many thinning strategies available, I decided to just go with a short no thin rotation for this comparison. Two things to consider is that in the real world, thinning is highly recommended, and also, by planting advanced genetics you can harvest earlier. One last point, I used timber prices generally reflective of my primary market of Southwest Georgia, but keep in mind prices vary greatly not just from region to region, but even county to county depending on where mills are located in relation to any given property. Additional factors affect pricing such as access in wet weather, wood volume, wood quality, contract length offered, demand from mills at time of sell, and expected future mill demand during the duration of the timber contract. Following are the results of the simulated rotations:

Comparison of Planted Loblolly Pine Spacing and Seedling Quality				
by Mike Matre, ALC, RF, ACF		6/9/2025		
Consulting Forester & CEO, Matre Forestry Consulting, Inc.				
https://www.matreforestry.com/				
Senior Advisor & Associate Broker, Saunders Land				
https://land.saundersrealestate.com/about/land-advisors/mike-matre/				
Disclaimer: Simulated in a planted loblolly growth and yield model. Not guaranteed.				
Note: It is assumed that hunting lease revenues will offset property taxes and misc.				
Simulated a no thin rotation for simplicity of the comparison. Thinning is recommended.				
1. Regime 1				
605 Trees per Acre on a 12x6' spacing; Open Pollinated Seedlings				
Total Reforestation Cost		\$ 325.00		
No thin, Age 20 Clearcut				
Site Index: 70' at Age 25				
Product	Tons	\$/Ton	Gross	Net (.92)
Pine Pulpwood	68.2	\$ 9	\$ 613.80	\$ 564.70
Pine Chip-N-Saw	67.5	\$ 24	\$ 1,620.00	\$ 1,490.40
Pine Sawtimber	0.0	\$ 34	\$ -	\$ -
Total	135.7	\$ 16	\$ 2,233.80	\$ 2,055.10
per Acre per Year	6.785		\$ 111.69	\$ 102.75
Discount Rate: 5%; Inflation Rate: 0%				
Net Present Value	\$ 465.02			
Internal Rate of Return	10.19%			
Bare Land Value	\$ 746.29			
At age 20, 474 trees per acre; 155 sqft Basal Area; 7.7" Avg. Dbh (2" - 12";				
60' Avg. Height of Dominant Trees,				

2. Regime 2

389 Trees per Acre on a 14x8' spacing; Mass Control Pollinated Seedlings

Total Reforestation Cost		\$ 400.00		
No thin, Age 20 Clearcut				
Site Index: 80' at Age 25 (Gain in Site Index is a result of superior seedlings)				
Product	Tons	\$/Ton	Gross	Net (.92)
Pine Pulpwood	33.1	\$ 9	\$ 297.90	\$ 274.07
Pine Chip-N-Saw	99.0	\$ 24	\$ 2,376.00	\$ 2,185.92
Pine Sawtimber	11.3	\$ 34	\$ 384.20	\$ 353.46
Total	143.4	\$ 21	\$ 3,058.10	\$ 2,813.45
per Acre per Year	7.17		\$ 152.91	\$ 140.67
Discount Rate: 5%; Inflation Rate: 0%				
Net Present Value	\$ 679.41			
Internal Rate of Return	10.81%			
Bare Land Value	\$ 1,090.35			
At age 20, 313 trees per acre; 140.8 sqft Basal Area; 9.1" Avg. Dbh (3" to 14");				
69' Avg. Height of Dominant Trees,				

I will summarize some key points. First, a simple but important metric when analyzing different planted pine management practices is tons per acre per acre year. Regime 1 projected 6.8 tons per acre per year, while Regime 2 projected 7.2 tons per acre per year. That seems very reasonable to me, as I have always contended that trees per acre is not critical over time, because as long as a stand is decently stocked, the individual trees will utilize the space available to grow. If you plant fewer trees per acre but also plant advanced genetics, then tons per acre per year should be at least be comparable to a tighter spacing, and likely be even better.

Next, let's look at sawtimber yield at the clearcut. The wider spacing does result in bigger diameters due to increased growing space, along with superior genetics. Regime 2 is projected to have diameters at breast height ranging from 3" to 14", while Regime 1 has a range 2" to 12". Those diameter ranges on a no thin rotation seem realistic to me, and Regime 2 would certainly have more chip-n-saw and some sawtimber as a result of bigger diameters.

On financial performance, the best metric in comparing different planted pine regimes is Bare Land Value, (BLV), also known as Soil Expectation Value (SEV). SEV is simply the Net Present Value of an infinite series of the same rotation. A 5% Discount Rate and 0% Inflation Rate was used in the calculations. Regime 1 had a n SEV of \$746 per acre, while Regime 2 had an SEV of \$1090 per acre. SEV also comes in handy for estimating other value associated with a timberland property. For example, if a timberland investor is purchasing a tract for \$2,000 in the dirt plus timber value, and they estimate that the tract has an \$800 per acre across the board SEV for growing timber, that would mean their is approximately \$1200 in dirt value allocated from some other influence besides growing timber, such as recreational value for hunting and/or Higher & Better Use pressure such as development. Since the days of finding good timberland at a dirt price somewhat close to SEV, timberland investors have to now realize they are investing in bare dirt for growing timber + timber value + "other value", and hope the "other value" is still strong at the time of tract liquidation. With so much demand for recreational land and more and more people seeing the value of owning land, I expect the "other value" part of the equation to remain strong.

Regime 1 had a Net Present Value (NPV) of \$465 per acre, while Regime 2 came in at \$679 per acre for NPV. Before blasting this newsletter out, I wanted to see what others may be projecting. A google search led me to an interesting article at:

<https://www.arborgen.com/treelines-forestry-news-updates/treelines-august-2021-1st-edition/>

The Arborgen study, which was based on actual field studies, looked at thinning at age 12 and clearcutting at age 25. The resulting NPV in their field study was similar to my simulated projections. The stand in the Arborgen field study with lesser quality open pollinated seedlings had an NPV of \$462 per acre, very close to my Regime 1 at \$465 per acre. The NPV for their advanced genetics stand had an NPV of \$745 per acre, a little better than the NPV for my Regime 2 of \$679 per acre. I expect that if I had simulated a 1st thinning and a little longer to clearcut, my NPV estimates would have improved

somewhat.

I spoke with Blake Sherry; Arborgen Reforestation Advisor for Florida, Southern Georgia, & Southern Alabama; about spacing and genetics. Blake said their Mass Control Pollinated (MCP) seedlings do exceptionally well at wider planting densities. While they have a good many customers planting in the 400s per acre now, he mentioned one customer who has planted MCP (Mass Control Pollinated) loblolly in a test stand on an 20x8' spacing, which is 272 trees per acre. Blake said that even at less than 300 trees per acre the stand is looking good. Blake stressed that with advanced genetics MCP seedlings and wider spacing, larger diameters will produce more sawtimber, and do so quicker. For more information on the importance of diameter growth, see Blake's recent TreeLines article: [Log Specs: Why Diameter Growth Is More Important Than Height Growth](#) .



Above: Photo Credit: Arborgen. MCP Loblolly Pine, Age 12, Coastal, 60 feet tall

Internal Rate of Return (IRR) is similar for both regimes, 10.19% for Regime 1 and 10.81% for Regime 2. Strong IRR of the cost associated with planting a stand of pines and the future revenues from those pines demonstrate that planted pines are a great use for your land, especially land not suitable for irrigated farming. Also demonstrated is that planted pines go hand and hand with wildlife management, and habitat and huntability will be improved with wider spacings, without sacrificing return on your investment.

In conclusion, consider planting advanced genetics on wider spacings for more growing space, for more options on thinnings and final harvests, for quicker growth, for better tree quality, for better stand health, for dealing with a challenging pulpwood market, for more sawtimber, and for improved wildlife habitat and huntability.

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Mike Matre

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Sincerely,

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