

THINNING PINE

Hard to get done but worth the effort

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Thinning pine stands is one of the most effective methods of increasing stand growth and value, yet a variety of conditions has led to a steady decline in thinning operations since the 1970s. If done properly and at the right time, however, thinning is worth the effort.

Typically, thinning was done with shortwood harvests, a more labor-intensive method than the longwood harvesting systems popular today. Mechanized harvesting of the whole stem, now practiced all across the South, meant investments in machinery better suited for clearcutting. It proved cumbersome and expensive for thinning applications. From the owner's standpoint, mechanized thinning was often too costly and too destructive of trees left standing.

Most of the reasons supporting thinning in the past, however, are applicable today, and the financial incentives are probably better than ever - if the operation is done properly.

Timber is a long-term investment. A stand may not reach maturity for 25 to 30 years down the road.

In contrast, if you thin your timber, a financial return can be obtained early in the rotation - many years before the final harvest. While the actual value of thinning revenues varies, a densely planted stand of pine can yield as much as ten cords per acre during a commercial thinning harvest. In addition, most pine stands can be thinned more than once during the rotation. Timber managed on a 35 to 40 year rotation could be thinned three to four times yielding between three and ten cords of timber each time, either as pulpwood or chip-n-saw material.

Stand value can be enhanced by thinning out slow growing, poor quality timber and emphasizing production of sawtimber size trees. The graph illustrates the expected sawtimber (SI=65) under two different management strategies. The "no-thin" strategy consistently generates less sawtimber per acre than a strategy where the stand is thinned to 65 square feet of basal area at age 17. On a 25-year rotation, sawtimber yields increase by 150 percent when the stand is thinned. Even on a 40-year rotation, sawtimber yields increase by almost 45 percent under the thinning regime.

Insect and disease problems, particularly pine bark beetles, can be decreased through thinning. A variety of studies suggest that the southern pine bark beetle is more likely to infest slow-growing, overstocked stands. By thinning in average and high quality stands, you can reduce the probability that beetle infestation will occur.

Thinning also reduces waste by harvesting timber that, under a no-thin regime, would simply die and rot in the stand. Unthinned pine plantations, planted at densities of 650 to 1,000 seedlings per acre, will typically contain fewer

than 500 trees per acre at the end of a 25-year rotation. The remaining 200 to 500 trees die off, providing no yield or income. Thinning allows you to harvest profitably many of these trees before they die. You can also remove trees of little value which simply take up space in the stand. These include hardwoods, diseased and deformed trees classed as pulpwood.

The best time to thin a stand is early in the rotation, when the trees respond to increases in sunlight, water and nutrients that are created by a thinning. Stands older than 25 years respond poorly to thinning, and a heavy thinning cut in older timber will often create wind throw or insect problems. Timber removed during a thinning, however, should be marketable. If the average stand diameter is less than 6 inches d.b.h., you may want to delay thinning until the timber reaches a marketable size.

You should also measure stand density to determine if the timber needs thinning. Most foresters measure the average basal area per acre of a stand to determine density and to estimate the amount of timber to remove. Basal area per acre measures the cross sectional area in square feet taken up by a stand of trees on a per basis (see table). This measure is unaffected by tree size and provides a fair and unbiased estimate of stand density. Common stand densities for pine range from 50 to 150 square feet per acre in the South. Stands measuring greater than 100 square feet of basal area are prime candidates for thinning, particularly if most of the stand is at least pulpwood size (5 to 6 inches d.b.h.).

Before thinning, mark the trees selected for removal with marking paint at two points; chest height where it is easily visible and at the groundline to verify that only marked trees are harvested. Trees can often be tallied as they are marked providing an accurate measure of the volume being removed. Consulting foresters and, in some states, the county forester often mark trees for a small fee. Trees that are diseased, of poor quality, overtopped or deformed should be marked for removal. Leaving the best trees will ensure fast growth and good form in the stand. A poor marking operation lowers the quality of the stand, reduces growth potential and minimizes the amount of high value timber produced after the thinning.

Some landowners believe that a diameter limit thinning where most of the trees above a specific minimum diameter are marked and harvested, works bet at maintaining natural stands of pine. When a stand is marked and harvested for a thinning of this type, the best trees are removed and the poor quality, slow growing timber is left as growing stock. A diameter limit cut is comparable to a farmer selling his best breed stock and using the runts to sire next year's litter - it's just not good management.

In contrast, low thinning, where only small diameter stems are marked for harvest, often produces the best results in southern pine stands. By removing small diameter stems, low thinning creates more favorable growing conditions for larger trees in the stand and generally enhances stand quality. Growth is focused on the more valuable trees to increase both size and value. The graph illustrates just how well a low thinning can increase the production of high value timber.

A third option, called row or mechanical thinning, removes every third, fifth or seventh row of pines in the stand. The objective of a row thinning is to increase growing space for the residual trees. This method does not enhance stand quality, but will provide more growing room for remaining trees. a similar method, called strip cut method, can be used to create rows in the

the corridors created during a row thinning also provide machine access for later management, such as prescribed burning or herbicide application. On natural stands, stand. Row thinning is most effective early in the rotation. If you plan to thin early in the rotation consider thinning out every fifth or seventh row in combination with a low thinning between removed rows. This approach, called a combination row and selection thinning, provides more room for stand growth and increases stand quality by removing less valuable stems. Combination thinnings work well where only one thinning is planned over the entire rotation.

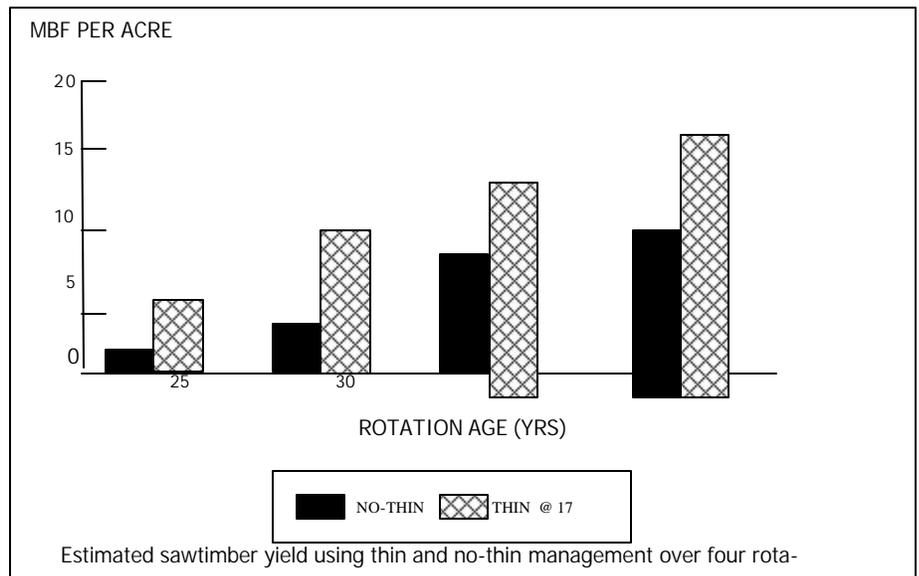
Timing is an important consideration when thinning because of possible insect and disease damage that might occur if the stand is thinned at the wrong time of year. You can reduce the spread of Annosus root rot by timing the thinning operation properly.

Annosus root rot is more likely to infect and spread through a

thinned stand if the thinning is done during the winter months. The best time to thin in areas where annosus is present is during the summer months between June and August. Studies indicate that thinning between October and January substantially increase the risk of annosus infection in a stand, particularly in areas where this disease is already prevalent.

In contrast, pine bark beetle infestation increases in the summer months. In areas where beetle infestation is moderate to high, the best time to thin would be during the winter between December and March. In areas where beetle infestation is low, thinning can usually be conducted any time of the year. You can usually contact the county forestry unit or county extension agent to determine the level of beetle infestation in your area.

Finding a reputable buyer or logging contractor to thin your timber is critical. Many landowners employ a consulting forester to guarantee a successful thinning operation.



Stand DBH (inches)	BA/Tree (sq.ft.)	Number of trees/acre @ BA/acre of:			
		75 sq. ft.	100 sq. ft.	125 sq. ft.	150 sq. ft.
6	0.1963	382	509	637	764
8	0.3490	215	287	358	430
10	0.5454	138	183	229	275
12	0.7854	96	127	159	191
14	1.0700	70	94	117	140
16	1.3962	54	72	90	107

Many landowners employ a consulting forester to guarantee a successful thinning operation. Consulting foresters usually know the market and reputation of local buyers. They can protect your interest throughout the sale and thinning harvest. They also mark the timber, handle the sale and watch over the thinning operation to ensure that the logger is doing a good job. Consulting foresters typically charge a percentage of the harvest value in return for these services, but most landowners find that hiring a consultant is worthwhile.

Be sure to get everything into a valid contract. Include penalties for excessive residual stand damage, cutting unmarked trees, fence or boundary damage and other problems that you might encounter.

Set a time limit for completion of the harvest and specify the dollar value of the contract. Do not take anything for granted or assume that the buyer is responsible for anything not specified in the contract. Finally, consult with the logger who is thinning your stand. Make sure he knows where fences and property lines are and what you expect upon completion of the harvest.

Do not be surprised if the logger thinning your timber runs a mechanized operation. Modern thinning contractors use mechanized equipment to increase production and reduce their need for labor. These mechanized operations, when handled properly, are highly productive and need cause little damage to the residual stand. If you notice excessive stand damage during the harvest, don't hesitate to contact the buyer and explain the situation. Remember, it is your timber and you want to take good care of it.

Thinning your timber is a big step that involves considerable effort on your part. A good thinning operation, however, will increase stand growth, reduce the possibility of insect and disease problems, and increase final harvest value. Think of a thinning as an operation that provides a little money now, but focuses your investment on even greater returns for the future. If you are interested in managing timber for production and quality, include thinning operations in your management plan. It really does pay.

