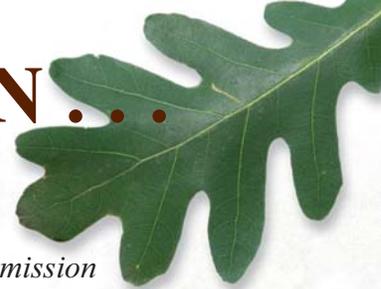


TO BURN OR NOT TO BURN . . .

That Is the Question

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I am frequently asked about prescribed burning of hardwood stands. To do something I have always been warned against is probably in my nature (as others have told me), but I usually answer this question with a question: *Why would you want to burn your hardwood stand?*

In the following article, I will address some of the answers I receive when I ask that question, and my response. This is not a scientific article based on data from past or ongoing studies. It is however, a reflection of my observations over the past 34 years of practicing forestry in Alabama, as well as seeing some studies actually implemented on the ground. In other words, it is my opinion based on practice, not theory. First I need to remind you that in Alabama we have two distinct hardwood growing regions: uplands to include coves and drains, and bottomlands. As discussed in earlier articles, the species composition of the two regions is similar, but there are some silvicultural differences when it comes to growing quality sawtimber products in each region.

Why do you want to burn your stand of hardwood or your hardwood site?

Answer #1 – I want to improve wildlife habitat on my property.

Response: If improved wildlife habitat is your primary objective and you have absolutely no regard for the quality of the hardwood timber within the stand, and it is on an upland hardwood site, then a very cool burn may clean the stand up a bit and possibly create some browse. The key word is “cool” burn. Most landowners think they understand what a “cool” burn consists of, but never really achieve the “cool” part of the complex list of variables associated with a prescribed burn. Ambient air temperature is probably the single most important factor affecting fuel moisture. The instantaneous lethal temperature for growing plant tissue, including the cambium under the bark and buds, is approximately 145°F. However, the dwell time around the root collar or in the crown may result in live tissue mortality at lesser temperatures, depending on whether the tissue is dormant or actively growing.

As you know, most hardwood species have thinner bark than most softwood species. The bark thickness determines the insulating protection from direct flames and associated heat. The thinner bark results in a much less fire-tolerant species. Most upland hardwood burns do not result in mortality of the entire tree, but do result in scorching and splitting of the bark. The result is an opening in the bark that allows stain, decay, and rot to enter into the cambial layer, ruining the grade of the butt log. The scarred trees may live for years, but the ability of a particular tree to grow or stay in the grade sawtimber category has been greatly diminished.

I have yet to see a “cool” hardwood burn that did not result in damage to the existing growing stock. Simply put, hardwood sawtimber production and burning do not mix. This observation has held true even more so on bottomland sites.

Answer #2 – I want to reduce the fuel buildup in my hardwood stand.

Response: Some ongoing studies in North Alabama and Tennessee have shown that hardwood litter does not have the

same characteristics and buildup potential as softwood litter. Thus, this litter buildup reasoning does not justify the adverse effects of burning quality hardwood sites.

Answer #3 – I want to improve my oak regeneration potential.

Response: First and foremost, if you do not have an oak component in the existing stand, it is very unlikely that a prescribed burn will improve any oak regeneration potential. Oak regeneration is disturbance-oriented and based on the fact that some type natural oak in the stand will provide the source of regeneration after the disturbance. My point is that in order to naturally regenerate an existing oak stand, evaluations need to be made prior to a harvest or burn to evaluate the regeneration potential, and then take steps to increase the potential if it does exist. In a bottomland stand, this may involve no more than a silvicultural final harvest if the potential is medium to high. On sites with less potential, a shelterwood harvest may need to be implemented to open the stand and to target oak as “leave” (mother) trees to provide seed for advanced regeneration.

I have seen studies that say a prescribed burn can improve the regeneration potential of oak. What they fail to mention is the harmful effects to the existing stand that may be incurred from the burn. If you have quality sawtimber in the shelterwood overstory – which you should have – and you blister the bark, your timing of the final harvest just got planned. I have seen the results of this type burn on the Cumberland Plateau dealing with scarlet oak. The main issue I observed was the residual fire damage to the overstory. At some point, if the regeneration burn is successful, that overstory will be harvested in order for the regeneration to grow properly. Will the economic loss justify the means? It depends on your individual objectives.

Answer #4 – I want to clean up the logging debris (i.e., site-preparation).

Response: Unless the logging debris is in piles and the area involved is limited to as small an area as possible, I would not burn. Bottomland hardwood sites and most upland hardwood sites will naturally regenerate after a harvest cut with the species that previously existed in the stand. This is accomplished by the existence of – or prior establishment of – advanced regeneration, seed in place, root sprouts, and stump sprouts. Regardless of the species, if you burn this area hot enough, you will do damage or destroy this process. Most site-prep burns involve 10-hour and 100-hour heavy fuels that will prevent you from having a “cool” burn. Even though it is not aesthetically pleasing to leave the scattered logging debris, site-prep burns for naturally regenerated hardwood stands do more damage than good.

Summation: As you can tell, I am not a proponent of burning in hardwood stands for any reason when the landowner’s objective is to grow quality hardwood sawtimber. This issue is more complex than the discussion put forth in this article. I am also sure there are some folks that will disagree with my observations, maybe strongly, but as a general rule, fire and hardwood silviculture do not mix. Too many prescribed burners do not realize the damage they are creating. After all, we burn pine stands to kill or knock back the in-stand or remaining hardwood.

Why would you want to burn your hardwood stand? 🏠

HARDWOOD CORNER