

# When Will a Prescribed Burn Help My Pine Stand?

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Fire is part of a healthy Southern pine forest. Fire can enhance the productivity of pine forests, but it can also cause injury, poor growth, and death of desirable trees.

Since fire can both harm and benefit forests, landowners may wonder when prescribed burning is “right” for their pine stands. You should consider several important factors in determining when or if prescribed burning will help in management of your pine stands.

These factors include your stand management objectives; tree diameter, height, and spacing; the amount of pine litter, brush, and other fuels beneath the pines; and the time of year to use fire to accomplish your objectives. We recommend you seek competent professional forestry advice about using prescribed burning to reduce damage and potential liability.



Prescribed burning is the deliberate use of fire under ideal conditions to achieve forest management objectives.

## Management Objectives

You will usually have more than one management objective for your pine stands. The main one may be timber production, but you may also wish to manage your stands for wildlife benefits and natural beauty. Prescribed burning can help you reach all of these management objectives. It can control competing vegetation in pine stands that would otherwise reduce the growth of the desired trees as well as reduce the risk of destructive wildfires.

Wildlife species such as turkey, deer, and quail benefit from the plant growth stimulated by prescribed burns. Research has shown that both quantity and quality of understory food plants for these and other animals are improved through a series of prescribed burns. Also, the edge between burned and unburned stands increases the variety of wildlife habitat on a landowner's property.

Prescribed burning can improve the appearance of a stand by increasing visibility and stimulating the production of flowering plants in the understory. Improved access through the stand also improves recreational opportunities such as hiking and birdwatching. Easier access created by prescribed burns will make future thinnings and harvest sales more attractive to timber buyers and loggers.

## Condition of the Pine Stand

Many landowners ask, “How old should my pine trees be before I can use a prescribed burn?” Other factors are more important than the age of your trees. These factors include tree diameters, tree heights, and the spacing of the trees.

## Tree Diameter

Diameter at Breast Height (DBH) is the diameter of a tree, outside the bark, at a point 4½ feet above the ground. The diameter of pines from ground level to DBH indicates the tree's resistance to damage from fire. Larger diameter trees have a thicker layer of bark that insulates the tree from the heat of the fire. Pines with a DBH of 3 to 5 inches can usually withstand a low intensity, winter season prescribed burn. Pines with 8, 10, and 12 inches DBH can tolerate higher intensity fires in different burning seasons. Trees with a DBH less than 3 inches can be damaged by fire and should not be burned.

## Tree Height

As trees grow taller, they shed their lower branches. This creates a gap between a fire on the forest floor and the tender needles and shoots on the living branches that can be damaged by the fire. As the distance between the live pine branches and the forest floor increases, so does the tree's tolerance to the effects of prescribed burning. If a stand contains live branches below 6 to 8 feet in height, a prescribed burn should be postponed for at least two years.

## Tree Spacing

The spacing of pine trees impacts how quickly the lower branches of each tree will be shed. Closely spaced pines shed their lower branches sooner than pines planted farther apart. These branches contribute to the fuel on the forest floor. In addition, the crowns of closely spaced pine trees can trap heat from a prescribed burn beneath the live branches. This heat can injure or kill pine needles in the crowns, thus weakening the trees.

Although a closely spaced pine stand may appear to have a thick carpet of pine needles and twigs on the forest floor, not all of this fuel may burn at any given time. Weather conditions before and during the fire affect how much of the fuel is actually burned. Also, the closely spaced pine trees will shed their lower branches and needles earlier in life, thus increasing the

amount of fuel on the forest floor. The close spacing helps trap moisture in the pine litter and reduces the amount of brush or other plants that can grow in the understory, thus inhibiting fires.

A closely spaced pine stand with dead branches close to the ground that are draped with dead pine needles is a special concern. These dead needles are dry and extremely volatile. If you do not burn properly, these draped fuels can carry a fire from the forest floor into the tree crowns, causing severe injury and perhaps killing trees.

These are the minimum general conditions to consider before conducting a prescribed burn in your pine stand:

- An average DBH of 6 inches or greater
- A minimum distance of 15 feet to the lowest live branch
- Adequate canopy gaps to allow heat to escape

## Time of Year

It is important to plan the first prescribed burn of a pine stand during the winter burning season. Cool air temperatures and more predictable winds create more favorable fuel moisture conditions for a low intensity fire that should cause little damage to the pine trees. Prescribed burns conducted later or after earlier burns can be scheduled at other seasons to produce higher intensity burns to meet different objectives. For example, the best time to burn to control understory brush and vegetation is in late spring or early summer. Small understory hardwood species are more easily killed by a prescribed burn at this time.

## Conclusion

Fire can be beneficial or damaging to pine forests. Prescribed burning is a very useful tool in pine management, but only when applied carefully and by skilled professionals. Other aspects of prescribed burning, such as cost, availability, firing techniques, and other details have not been discussed in this publication. Seek the advice of local foresters if you are considering prescribed burning. Professional foresters can help you plan a safe burn - both for you and your pine stands.