

# Prescribed Burning -- Forest Land

Alabama Guide Sheet No. AL 338



## Definition

Prescribed burning is the deliberate use of fire to help manage a forest. It is a complex management tool and should be used by only those who are trained and experienced in its use.

## Benefits

### Hazard Reduction

Prescribed burning helps to eliminate fuels such as pine needles, hardwood leaves, fallen branches, and herbaceous vegetation that accumulate on the forest floor. These fuels increase the chance of destruction of young stands if a wildfire erupts.

### Control of Understory Vegetation

Prescribed burning helps control low-quality hardwoods and shrubs. Understory vegetation competes with pines for moisture and nutrients, and may interfere with regeneration.

### Site Preparation

Pines require a clean and open seedbed in order to regenerate. Prescribed fire helps prepare sites by exposing the mineral soil and controlling undesirable vegetation for natural regeneration and direct seeding. Prescribed fire is also used in combination with other site preparation methods to prepare sites for tree planting.

### Wildlife Habitat

Burning helps increase the yield of herbs, legumes, and hardwood sprouts. Areas are also opened up, encouraging feeding, travel, and dusting. This

increases the “edge” effect that wildlife like. Quail, turkey, deer, and dove benefit the most from prescribed burning.

### Disease Control

Longleaf seedlings are severely weakened and sometimes killed by brownspot disease. This is a disease that prolongs the grass stage, reducing height growth. Prescribed burning scorches the needles and kills the fungus, without killing the seedlings. Annosus root rot infestations are also reduced by prescribed burning.

### Improved Access and Aesthetics

Reducing the amount of understory prior to harvest cutting improves visibility and makes timber marking and cutting easier. Prescribed burning helps control the understory, improving accessibility for hunters or other recreational purposes. A wide variety of plants, including many flowering annuals, will increase in number.

### Fire-dependent Species

Some species of animals and plants are dependent on fires. These species include the gopher tortoise, indigo snake, red-cocked woodpecker, wire grass, and pitcher plants. When an area is burned regularly these species may increase in numbers.

## Preparation for Burns

1. Notify the Alabama Forestry Commission and obtain a permit to burn.
2. Get a two-day weather forecast from the U.S. Weather Service.

3. Prepare necessary firebreaks. (Refer to Guidesheet AL-394.)
4. Have on hand the help, tools, and equipment needed to keep fires under control.
5. Thoroughly inspect fuel (burnable vegetation) conditions.
6. Notify adjacent landowner(s) of intent to burn prior to burning.
7. Have a professional who is certified in prescribed burning develop a prescribed burning plan and provide onsite supervision while burning is done.

## Optimal Weather Conditions

In most cases, the surface fuels should be dry and the soil should be moist to help protect roots. Therefore, it is a good idea to burn one to three days after a good rainfall (1/2 to 1 inch). Damage is caused to trees when the fuel is too dry. The humidity level should be between 30 and 55 percent. When the humidity is above 60 percent, the fire may not get hot enough or may not burn the area completely. The air temperature should range from 20 to 50 degrees F in the winter and 80 to 95 degrees F in the summer. A moderate, steady wind from the north or northwest is best. This usually happens after a cold front has passed through. Easterly winds are not recommended because they are often erratic. The preferred wind speed is 1 to 3 miles per hour (within the stand) and 6 to 15 miles per hour in the open.

## Safety

Safety precautions must always be used when performing a prescribed burn. You must also have an experienced crew leader, an adequate number of people to conduct the burn, and the correct tools and equipment. There is potential liability and the loss of human life and property if burning is not conducted properly. You must follow all applicable laws.

## Types of Burns

### Forage Production

Prescribed burns to improve forage quality of native grasses and to help control undesirable woody vegetation and annual broadleaf weeds in grazed forest land should be made in February or March. Burns can be made as often as needed.

### Wildlife Purposes

Prescribed burning should be done from January to March. This prevents killing new spring growth, does not interfere with nesting season, and encourages the growth of hardwood sprouts and herbaceous plants. For quail, turkey, and small game, burning should be done every two years. Annual burning is applicable in areas with rapid vegetation growth. However, unburned areas should be retained so that sufficient cover is available for nesting. Burning should be done on a two to four year rotation for deer.

### Forest Land Management

The best intervals for prescribed burning in forests are two to three years. Winter is the best time of the year to burn for fuel reduction, disease control, forage improvement, aesthetics, and access. When burning for hardwood control, burn during the growing season. Burning for site preparation should be done during the summer or early fall.

## Burning Techniques

### Backfire

This technique consists of backing fire into the wind. The fire is started along a prepared base line such as a road, plowed line, stream, or other barrier. This technique is the safest type of prescribed fire.

### Strip-head Fire

This fire involves setting either a line of fire or a series of lines upwind from a firebreak so that no line of fire can develop into a high intensity fire before it hits either a firebreak or another line of fire.

### Flank Fire

The flank fire technique consists of treating an area with lines of fire set into the wind at right angles. This method is useful for small areas or to facilitate burning large areas in a relatively short amount of time.

### Ring-fire

As with other burning techniques, a base-control line is made secure with back and flank fires. Once the base line is secured, the entire burn area is circled with fire and allowed to sweep over the area. Care should be taken with this technique because it can produce strong convection columns and cause spot fires up to one mile away.

## Spot-fire

The spot fire technique consists of several small spot fires which burn in all directions as they come together. This method allows large acreages to be burned in a short period of time.

## **Smoke Management**

A prescribed burning plan should be prepared well in advance. This plan should include smoke management as part of the prescription. Smoke management is identifying potential problems related to the smoke from the burn and taking the proper steps to minimize its impact. The most important step of smoke management is to locate smoke-sensitive areas such as highways, airports, hospitals, farms with livestock or poultry, and populated areas. The next step is to determine how these areas will be affected by smoke. This is accomplished by obtaining the latest weather forecast and checking the fuel conditions. Use a test fire to check the fire behavior and smoke dispersion. Remember, slightly unstable to unstable weather conditions are ideal for smoke dispersal. Burn when visibility is good and the transport wind speed is 9 miles per hour or greater. Avoid windrows and large piles containing soil. These

produce a large amount of smoke. Instead, favor small piles or leave debris scattered. Burn debris when it is dry and cut low stumps and fell dead snags. Do not burn at night, burn during the middle of the day or early afternoon. Atmospheric conditions always deteriorate at night. Smoke will stay near the ground and drift down-slope and down-drainage, settling in low areas.

## **References**

- USDA-NRCS Alabama Conservation Practice Standard Code 338 - Prescribed Burning. January 1999.
- Prescribed Burning in Alabama Forests. Circular ANR-331. Alabama Cooperative Extension System, Alabama A&M and Auburn University.
- A Guide for Prescribed Fire in Southern Forests. U.S. Department of Agriculture Forest Service. 1978.
- Smoke Management Guidelines for Prescribed Burning in the Southeast. Hugh E. Mobley, Forestry Consultant. 1996
- Prescribed Burning for In-Experienced Burners, PRECEDA Education and Training. April 1998.

*The United States Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, gender, religion, age, disability, political beliefs, sexual orientation, and marital or family status. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact the USDA's TARGET Center at (202) 720-2600 (voice and TDD).*

*To file a complaint of discrimination, write the USDA, Director, Office of Civil Rights, Room 326W, Whitten Building, 14th and Independence Avenue, SW, Washington, D.C. 20250-9410 or call (202) 720-5964 (voice or TDD). USDA is an equal opportunity provider and employer.*