



Definition

Prescribed burning is applying fire to predetermined areas under conditions that the intensity and spread of fire are controlled.

Why prescribed burning?

When applied properly, prescribed burning can have a variety of applications and benefits on rangeland, native pasture, land retired from agricultural production (e.g. Conservation Reserve Program) and land managed for wildlife. Prescribed burning can be used to:

- Maintain or restore desired plants within a plant community
- Improve forage quality and/or quantity
- Improve or change grazing distribution within a pasture
- Reduce excess plant litter
- Enhance seed production
- Suppress woody plant component and/or invasion
- Improve wildlife habitat
- Enhance wetland plant diversity

Prior to performing a prescribed burn, one needs to have a clear understanding of the intended purpose of the fire. Without a clear understanding of the purpose of the burn, it is difficult to properly plan and prepare for the burn.

Prescribed Burn Plan

Anyone conducting a prescribed burn is strongly encouraged to obtain and follow a Prescribed Burn Plan, developed by a qualified individual. This plan will outline the environmental conditions (fuel type, wind speed and direction, relative humidity, etc.) under which the burn should be conducted and contain recommendations on ignition patterns which will result in a safe, effective prescribed burn. Post-burn management guidance will also be provided in the plan.

Contact your local Natural Resources Conservation Service (NRCS) or North Dakota Forest Service office for names of individuals qualified to develop prescribed burn plans.

Prescribed burns should **not** be conducted when the Rangeland Fire Index is in the **Very High** or **Extreme** category. Rangeland Fire Index ratings may be obtained by contracting the local sheriff's department or the National Weather Service. Fire weather forecasts can be obtained from the National Weather Service at <http://www.crh.noaa.gov/bis/> or <http://gacc.nifc.gov/nrcc/predictive/weather/weather.htm>.

Summary of Factors

There are several primary factors to consider when planning a prescribed burn. Fuel (amount, type and moisture content), wind (speed, direction and potential for change in direction/speed), relative humidity, air temperature, soil moisture, slope of the area to be burned, smoke management, and neighboring landowners/home owners.

Following is a summary of each of these and other factors for quick reference:

- 1) **Fuel** – Primary fuel for most prescribed burns in North Dakota will be fine to coarse herbaceous materials (grasses and forbs). For planning purposes, fuel loads can be divided into two general categories:
 - A. Fine herbaceous fuels averaging less than 20 inches in height (i.e. mixed grass prairie)
 - B. Coarse herbaceous fuels averaging greater than 20 inches in height (i.e. tall grass prairie or CRP fields)Minimum fuel load should be 1,200 pounds per acre continuous across the burn area with at least 50 percent of the herbaceous fuel in an upright or standing position.
- 2) **Wind** – Wind speed and direction should be carefully monitored before and during the burn. Wind should be steady from between 4 and 15 miles per hour. Gusty winds and/or winds shifting greater than 45 degrees should be avoided. Calm conditions (wind speed less than 3 miles per hour) should also be avoided.
- 3) **Relative Humidity** – Relative humidity should be determined prior to the burn and monitored during the burn. Relative humidity for herbaceous fuels less than 20 inches in height will be 30 to 60 percent and 45 to 65 percent for herbaceous fuels greater than 20 inches.
- 4) **Air Temperature** – Air temperatures should be determined prior to the burn and monitored during the burn. Air temperatures for herbaceous fuels less than 20 inches in height will be 32° to 80° F and 25° to 80° F for herbaceous fuels greater than 20 inches.
- 5) **Soil Moisture** – Soils should be moist or wet to the touch from the soil surface to a depth of 10 inches.
- 6) **Topography** – Special planning consideration should be given to areas within the field to be burned which contain swales with steep slopes.
- 7) **Firebreaks** – Firebreaks are used to contain the fire to the desired area. Mechanical, chemical, wetline, burned, natural or structural firebreaks should be used alone or in combination. The type, width, location and orientation of firebreaks should be determined prior to the burn. Consult the NRCS Firebreak Specification and/or local fire department for specific planning guidelines for firebreaks.

- 8) **Types of Fire** – The following types reflect how the fire moves in relation to the wind.
- Head fires move with the wind and have the highest rate of spread and longest flame lengths. They are the most difficult to control.
 - Backing fires move against the wind. They generally move the slowest and are the easiest to control.
 - Flanking fires move at right angles to the wind. The rate of spread and flame lengths for flanking fires are between that of head and backing fires. Most flanking fires evolve into either head or backing fires.
- Since backing fires are the easiest to control, they are best to use when establishing burned firebreaks or when working in heavy fuel loads (e.g. CRP).
- 9) **Smoke Management** – All prescribed burns will produce a smoke column which will be visible and impact air quality. Burning when fuel moisture is low will reduce smoke output. Unstable atmospheric conditions are best for smoke dispersal. Transport winds should be at least 10 mph at 1,500 feet or higher.
- 10) **Public Notification** – Sheriff's office, rural fire departments and neighbors, especially those living downwind from the burn site, should be notified prior to the burn.

For more information on prescribed burning, contact the Natural Resources Conservation Service office located in your local USDA Service Center or visit:
<http://www.npwrc.usgs.gov/resource/habitat/burning/index.htm>