

**NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD**

PRESCRIBED BURNING

(Acre)

CODE 338

DEFINITION

Applying controlled fire to a predetermined area.

PURPOSES

- To control undesirable vegetation.
- To prepare sites for harvesting, planting or seeding.
- To control plant disease.
- To reduce wildfire hazards.
- To improve wildlife habitat.
- To improve plant production quantity and/or quality.
- To remove slash and debris.
- To enhance seed and seedling production.
- To facilitate distribution of grazing and browsing animals.
- To restore and maintain ecological sites.

CONDITIONS WHERE PRACTICE APPLIES

On all landuses except annually tilled cropland.

CRITERIA

General Criteria Applicable To All Purposes

This practice will be applied in accordance with all state and local laws and ordinances. (Refer to Texas Commission on Environmental Quality (TCEQ) regulations, Attachment III).

The Texas Forest Service has sole approval authority for burning in the forestland areas of the state (MLRAs 133B and 152). NRCS may

plan and apply prescribed burns in these MLRAs on pastureland, native pasture, and hardwood areas with prior notification and approval of the Texas Forest Service (TFS).

A current fire weather forecast is required prior to doing a prescribed burn. This weather forecast will be obtained from the NOAA's National Weather Service or a similar forecasting agency. (See attached forecasting map, Attachment II).

Plan precautionary measures to protect sensitive wildlife habitat, headquarters, oil and gas sites, power line poles, highly erodible areas, or other areas that could be unsafe to burn or suffer potential damage.

Prescribed Burn Plans will be developed using Texas NRCS Prescribed Burning Management Plan TX-ECS-1 or other burn plans comparable to TX-ECS-1.

All land uses where prescribed burning is applied will have a natural firebreak or an appropriate firebreak installed. A firebreak is a strip of bare land, water, or vegetation that retards fire. Dimensions and types of firebreaks will be designed for each burn and recorded in the Prescribed Burn Management Plan. The effective width should be approximately 10 times the height of the vegetation (fine fuel) being burned. The width of the firebreak includes the constructed firebreaks and the burned firebreak. (Refer to Firebreak Standard and Specification (394)).

When backfiring off a firebreak allow the blackline area to be a minimum of 100 feet in width for low-volatile fuels under the (cool season) 80-20-20 prescription or 200 feet or more in width under the (warm season) 95-20-

15-6 prescription. Blacklines will be at least 500 feet wide for all high volatile fuels.

Burn blacklines under the following conditions:

Wind velocity: 4 – 6 mph
Relative Humidity: 40 – 60 percent
Air Temperature: < 60° F

COOL SEASON BURN: 80-20-20

The critical limit for cool season burning is the 80-20-20 prescription. Cool season burning is typically conducted during the winter months while warm season vegetation is dormant. The prescription parameters are as follow:

- 1) Air temperatures equal to or less than 80° F,
- 2) Maximum wind gust velocities (measured at eye level) equal to or less than 20 mph, and
- 3) Relative humidity is equal to or greater than 20%.

WARM SEASON BURN: 95-20-15-6

The critical limit for warm season burning is the 95-20-15-6 prescription. This prescription is used to manipulate vegetation types during the summer months while warm season vegetation is semi-dormant due to limited moisture and high temperature.

Prescribed burning under the warm season prescription (95 20-15-6) can be utilized under the following guidance:

- 1) Air temperatures equal to or less than 95° F,
- 2) Relative humidity is equal to or greater than 20%,
- 3) Maximum wind gust velocities (measured at eye level) equal to or less than 15 mph, and
- 4) The ten-hour time-lag fuel moisture is equal to or greater than 6% for dead juniper.

A few examples of vegetation types where the 95-20-15-6 prescription may apply are as follow:

- When burning low-volatile fuels with the primary objective being control of prickly pear, where fuel loads greater than 2000 pounds can not be realistically achieved
- When burning in predominately tobosagrass fuels
- When burning areas in South Texas and along the Gulf Coast where complete dormancy is difficult to achieve
- When burning for waterfowl habitat enhancement.
- When burning volatile fuels in non-closed juniper canopies (< 30% juniper canopy cover) and where limited fine fuel loads occur (< 2000 pounds/acre).

Additional Criteria

When the 10-hour time-lag moisture is less than 6%, slash juniper areas will be highly volatile and will not be burned as spot fires are almost certain to occur. Ten-hour time-lag fuel moisture will be measured with appropriate moisture monitoring devices.

When burning juniper species, the green juniper leaf moisture must be less than 80% for a desirable suppression or kill. Crown fires can occur when green juniper leaf moisture falls below 60%.

Do not burn log-littered areas if the weather forecast is for strong winds within 3 days following a burn.

The fire boss is the sole leader and coordinator of all prescribed burning activities.

Do not burn until all precautions have been taken and all personnel on site are informed of the burn plan and their responsibilities during the burn. Have on hand sufficient equipment and manpower needed to control the fire at all times.

Do not burn within 12 hours of a predicted wind shift or if winds are light and variable.

“Mop-up” the burn before leaving. Maintain close observation of the burned area until the fire is extinguished. Be aware that stumps and manure may smolder for several days after the burn. Be especially careful with burning material near the perimeter of the burned area

and move burning or smoldering logs 50-100 feet inside the fireguard.

For specific purposes and conditions for burning, see Tables I.

CONSIDERATIONS

When existing brush encroachment, soil/vegetation site potentials, and/or low plant succession levels persist, one or more years of deferment may not be sufficient rest to produce an adequate fuel load.

Burning should be managed with consideration for wildlife needs such as nesting, feeding, and cover.

With any burn, the potential to expose the soil to erosion and invasion of undesirable plants exists. To limit the length of time the soil is exposed, prescribed burns should be applied when adequate moisture exist and as near as possible to the beginning of the growing season for the desired plant community.

Warm Season prescribed burns may occur on sites with considerably less soil moisture. It is important to understand that recovery of these sites will not occur until adequate precipitation is received.

When a portion of a pasture is burned, grazing management should be based on the burned area within the context of the long-range management plan. Burning will alter grazing patterns and can cause erosion on heavy use areas.

Existing inflammable barriers such as lakes, streams, wetlands, roads, and constructed firebreaks may reduce the cost of application and are important to the design and layout of this practice.

Notify adjoining landowners, local fire departments and public safety officials within the airshed prior to burning.

Preburn or protect with firebreaks any brush piles that are near downwind firebreak boundary.

Consider cultural resources and threatened and endangered plants and animals when planning this practice. Also consider highly erodible soils.

Weather parameters, pertinent fuel parameters, and other data that affect fire behavior should be monitored during the burn. Carbon release should be minimized by the timing and burn intensity.

Firewhirls can be caused by burning under "no-wind" conditions, burning headfires into backfires, and in canyons or hilly terrain. Do not use burning practices that encourage firewhirl production.

Consider the location of utilities such as electric power lines and natural gas pipelines to prevent damage to the utility and avoid personal injury. Utility companies should be notified regarding prescribed burn plans. In light fuel loads, continuity is more important for a continuous fire front than fuel loading.

Smoke impacts must be considered before the burn and monitored during the burn.

PLANS AND SPECIFICATIONS

Certified individuals will prepare a written burn plan. Individuals with appropriate approval authority for the planned prescribed burn may sign the completed burn plan. Specifications for applying this practice shall be prepared for each site and recorded using approved specification sheets, job sheets, technical notes, and narrative statements in the conservation plan, or other acceptable documentation. All necessary permits must be obtained before implementation of the practice.

As a minimum, a burning plan will include:

- Description of the burn area including present vegetation cover.
- Objective and timing of burn.
- Acceptable conditions for prescribed burn.
- Preparation of the area for burning.
- Equipment/personnel needs/safety requirements.
- Special precaution areas.
- Firing technique.

OPERATION AND MAINTENANCE

The decision to burn should be compatible with the long-term objectives of the resource and the client. In many cases, a long-term regime of prescribed burning will be needed to achieve the producer's objectives.

Prescribed fire may serve as a component practice in a brush management system designed to reduce brush to an acceptable tolerance level. Fire is only one tool in an overall management plan that may involve the use of multiple brush management techniques.

The burned area must be incorporated into a system of management, as stipulated in the Prescribed Grazing Standard, allowing for response of the desired plant community. When all of a pasture is not burned, grazing management will be based on the needs of the burned area.

All prescribed burning will be done in accordance with an approved prescribed burn plan.

All employees who conduct or participate in prescribed burning must have the proper certification and training. For new employees this will include the initial three-day burning course conducted by NRCS or its equivalent offered by selected universities. Each employee, who plans, approves or assist with prescribed burns must receive the NRCS refresher course at least once every three years. Job approval authority is provided by NRCS employees with Class IV approval/trainer authority.

All burn crewmembers will wear flame resistant clothing (Nomex, cotton or wool), leather gloves, and leather boots. Polyester clothing will not be worn. Protective eyewear is desirable. For crewmembers in smoky areas, an aspirator or breathing apparatus is desirable. Adequate fluids should be consumed during the prescribed burn to avoid dehydration.

Prescribed burning can be physically strenuous. All crewmembers should be in good physical condition to enable them to perform all necessary assigned tasks.

All fire fighting equipment should be tested prior to starting a fire.

TABLE 1 - CRITERIA FOR COOL SEASON BURNING

Vegetative Type and Specific Purpose	Season	Wind Velocity	Relative Humidity Optimum	Relative Humidity Maximum	Air Temp	Lbs.^{1/}	Frequency of Burning^{2/}
Improve: Forage Quality/Quantity for Wildlife, Livestock Grazing Distribution, and Stimulate Seed Production							
Warm Season Grasses	late winter to green-up	6-20 mph		20-80	30-80	2000+	as needed
Improve Browse or Cover Structure	mid Nov. to 3 weeks prior to green-up of browse	6-20 mph		20-80	30-80	2000+	as needed
Increase Cool Season Production ^{3/}	fall to early winter	6-20 mph		20-80	30-80	2000+	as needed
Spartina spp.	August 15 to March 1	6-15 mph		20-65	40-80	2000+	as needed
Kleingrass, Bermudagrass, Introduced bluestems, and Lovegrasses	January 1-April 1	6-15 mph		20-80	30-80	2000+	as needed
Reduction of Grass Rough	Fall/Spring	6-20 mph		20-80	30-80	2500+	
Control (>50% Efficacy) of Undesirable Vegetation							
Eastern Red Cedar	Winter to green-up	6-20 mph		20-50	30-80	1200 to 2000 +	every 3-5 years
Ashe Juniper (<70% green juniper leaf moisture)	Winter to green-up	6-20 mph		20-80	25-80	2000+	before growth reaches 4 ft.
Prickly Pear Cactus	Winter to green-up	6-20- mph		20-80	30-80	2000+	as needed
Suppression (<50% Efficacy) of Undesirable Vegetation							
Redberry Juniper (<70% green juniper leaf moisture)	Winter to green-up	6-20 mph		20-80	25-80	2000+	before growth reaches 6 ft. or seedlings reach 7 yrs. of age ^{4/}
Post Oak, Blackjack, and associated hardwoods ^{5/}	Anytime within 80-20-20	6-20 mph		20-80	30-80	300-500	as needed

TABLE 2 - CRITERIA FOR WARM SEASON BURNING

Vegetative Type and Specific Purpose	Season	Wind Velocity	Relative Humidity Optimum	Relative Humidity Maximum	Air Temp	Lbs.	Frequency of Burning ^{2/}
Warm Season Control (> 50% efficacy) of Undesirable Vegetation							
Ashe Juniper ^{6/}	May to September	6-15 mph	20-40	20-70	80-95	750 to 2000	before growth reaches 4 ft.
Prickly Pear Cactus With Tobosagrass	June to September	6-15 mph	20-40	20-70	80-95	2000+	as needed
Prickly Pear Cactus (heavy pear cover with limited fine fuel)	June to September	6-15 mph	20-40	20-70	80-95	750 to 2000	as needed
Warm Season Control (< 50% efficacy) of Undesirable Vegetation							
Redberry Juniper ^{6/}	May to September	6-15 mph	20-40	20-70	80-95	750 - 2000	before growth reaches 6 ft. or seedlings reach 7 yrs. of age ^{4/}
Macartney Rose	May to September	6-15 mph	20-40	20-70	80-95	750 +	as needed
Mixed Brush Communities	May to September	6-15 mph	20-40	20-70	80-95	750 +	as needed

FOOTNOTES FOR TABLE 1

- 1/ Fuel loads listed are the minimum level required to achieve satisfactory results.
- 2/ Frequency of burning will depend on objectives to be accomplished and what was accomplished with prior burns. If forage quality improvement is the primary objective, grazing management should be such that additional burns will not be needed frequently.
- 3/ Prior to green-up of desired species.
- 4/ Research indicates that following mechanical control, redberry seedlings can be effectively controlled with fire until they reach approximately 7 years of age or 3 feet tall, when the bud zone becomes covered by soil. This may happen more quickly on deeper soil sites and less quickly on shallow, rocky sites. Burning redberry juniper when they are greater than 6 feet tall or greater than 7 years old can be effective in reducing canopy but bud zone kill should not be expected.
- 5/ Dry, low relative humidity, weather conditions should exist 7-14 days prior to burn so that leaf litter has an opportunity to dry out adequately. Two foot wide fireguards are adequate when burning in the woods where leaf litter is the fine fuel load, provided that backfires are set on the downwind side prior to headfire ignition. If dead trees are adjacent to the fireguard, they must be cut down or properly protected prior to the fire. Cut, dead trees with leaves on them can be a major flaring and firebrand problem.
- 6_/ A crown canopy fire may develop when juniper canopy exceeds 30%. Other brush management alternatives must be planned when juniper canopies greater than 30 percent exist.

APPROVAL AND CERTIFICATION

PRESCRIBED BURNING

(ACRE)

CODE 338

PRACTICE STANDARD

PRACTICE STANDARD APPROVED

_____/s Homer Sanchez_____ 5/30/2003_____

State Range Management Specialist

Date

This practice standard is needed in _____Field Office.

Natural Resource Manager

Date

CERTIFICATION:

Reviewed and determined adequate without need of revision.

Zone Range Management Specialist

Date

Zone Range Management Specialist

Date