

NATURAL RESOURCES CONSERVATION SERVICE CONSERVATION PRACTICE STANDARD

PRESCRIBED BURNING

(Acres)
CODE 338

DEFINITION

Controlled fire applied to a predetermined area.

PURPOSES

- Control undesirable vegetation.
- Prepare sites for harvesting, planting or seeding.
- Control plant disease.
- Reduce wildfire hazards.
- Improve wildlife habitat.
- Improve plant production quantity and/or quality.
- Remove slash and debris.
- Enhance seed and seedling production.
- Facilitate distribution of grazing and browsing animals.
- Restore and maintain ecological sites.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies on all lands as appropriate.

CRITERIA

General Criteria Applicable to All Purposes

Cooperators will be cautioned to burn in accordance with applicable federal, state, and local laws and regulations. They must understand that they may be liable for damages caused by fire escaping from their land or for damage caused to others from inadequate smoke management. They may also be responsible

for fire suppression cost, should the fire escape the designated area.

The procedure, equipment, and the number of trained personnel shall be adequate to accomplish the intended purpose.

Burn crew shall wear clothing of fire retardant or natural materials (Nomex, cotton, wool, leather gloves and leather boots, etc.) including long sleeved shirt, long pants, hard hat (if burning in forest, shrub or woodland), gloves, high top boots and eye protection.

All persons working on a prescribed burn must be physically capable of performing the activities associated with prescribed burning.

All necessary permits must be obtained, including the IEPA Open Burning Permit, before implementation of the practice.

Cooperators without experience in burning will be advised to seek assistance from persons who have had training or experience in applying the practice.

The landowner or his/her designee must be on-site throughout the prescribed burn period. NRCS personnel will not serve as the landowner's designee.

Additional Criteria to Control Undesirable Vegetation

Specify applicable target species to be suppressed and potential of fire damage to non-target species on Illinois Job Sheet 338-JS, Section 2 - Purposes for Conducting the Prescribed Burn.

Time of burning to suppress deciduous woody species should be in late spring, when the target

Conservation practice standards are reviewed periodically and updated if needed. To obtain the current version of this standard, contact your Natural Resources Conservation Service [State Office](#) or visit the [Field Office Technical Guide](#).

species have just fully leafed and carbohydrate reserves are at their lowest, or in late fall.

Coniferous species, such as cedar, should be burned after the herbaceous species to be improved starts growth. The best suppression on coniferous species is achieved when they are small, from one to three feet tall. Larger trees will need to be cut prior to burn for best control.

Frequency of burning should be based on regrowth of target species, weighed against forage and/or wildlife habitat considerations.

Additional Criteria to Improve Wildlife Habitat

Burning for maintenance of ungrazed wildlife areas or grass stands under long-term retirement programs, should be carried out once every three to four or more years, depending upon amount of litter accumulation and vigor of stand. Upland habitats with droughty soils have longer rotations than more productive wet mesic habitats.

Do not burn between April 15 and August 1 in areas likely to be utilized by ground nesting birds.

Specify wildlife preferred plant species to be improved or enhanced and potential of fire damage to other desirable species on Illinois Job Sheet 338-JS, Section 2, Purposes for Conducting the Prescribed Burn.

Time of burning should be just prior to or soon after dormancy break of wildlife preferred species in the spring. A good rule of thumb is to burn when the wildlife preferred species have no more than one inch of new growth.

Limited wildlife habitat in the area should dictate limiting the area to be burned to less than 1/2 of the total area managed for wildlife habitat of the habitat type being burned.

Additional Criteria to Improve Plant Production Quantity and/or Quality

Frequency of burning should not be more than once every three years, to stimulate vigor and production of warm-season grasses or to maintain diversity of mixed-grass communities.

Specify on the burn plan desired species to be maintained or restored. Time of burning should be

just prior to or soon after dormancy break of desired species in the spring.

Generally, grass species are burned in spring when the desired grass has achieved 1" of new growth, usually from late February to late March for cool-season species and from early April to early May for warm-season species.

Additional Criteria to Facilitate Distribution of Grazing and Browsing Animals

Frequency of burning will be based on extent and duration of grazing responses, but should not be more than once every three years.

Grazing areas and desired species should be adjusted in relation to grazing pressure.

Time of burning should be just prior to or soon after dormancy break of desired species in the spring.

Additional Criteria to Restore and Maintain Ecological Sites (savanna and woodland communities)

Restoration of a savanna and/or reduction of aggressive nondesirable plants may require yearly or every other year burns for up to six years to open up the canopy, stimulate oak reproduction, and retard invader species. Once accomplished, limit burns to 5 to 15 year intervals for savannas.

Burn when desirable trees are dormant and more resistant to fire.

Keep flame lengths (scorch heights) less than 2 feet near the trunks of desirable trees. Fires with six foot scorch heights or higher will kill even larger (>11" diameter breast height (dbh)) oak trees.

Desirable oak saplings should be allowed to grow to 3-4" dbh before burning the area.

Dead wood left to burn can sterilize underlying soil for several years. Avoid burning brushpiles and downed logs by removing the material out of the burn area. Or, protect the dead wood with a firebreak and burn the area when conditions allow for a cooler fire and lower flame lengths to reduce the risk of igniting the dead wood.

CONSIDERATIONS

Prescribed Burning is not meant to be an annual management practice. Burn only to meet a specific management objective.

Precautions are needed to avoid air contamination from toxic substances or poisonous plants that may exist in an area to be burned. Smoke from burning poison ivy and other poisonous plants can be toxic to individuals and animals.

Burn when the vegetation to be burned is dry enough to carry a fire well, but while the soil surface is still damp to the touch. Good soil moisture helps to keep the soil temperature low during the burn.

Late fall and winter burns generally favors the forb component in mixed stands and is useful in improving wildlife habitat. However, fall and winter burns can leave the site vulnerable to erosion for long periods.

Additional Considerations for Reduction and Dilution of Emissions (smoke management)

Increase combustion efficiency using backing fires, burning dry fuels, use of burn piles or windrows and rapid mop-up.

Burn when conditions are good for dispersion of emissions (adequate atmospheric mixing height and sufficient transport wind speeds).

Reduce area burned by only burning concentrations of fuel, or mosaic burning, rather than 100% of the area.

Reduce fuel loading by burning more frequently, or by mechanical removal or processing of part of the fuel such as haying, grazing, biomass utilization and firewood sales.

Reduce fuel consumed by burning when non-target fuels are too moist or green to burn (wet large woody debris and moist litter and/or duff).

Schedule burn before new fuel is produced (before litter fall or green-up of vegetation).

PLANS AND SPECIFICATIONS

A detailed burn plan for the prescribed burn area must be prepared with the landuser, signed by the landuser, and approved according to policy prior to

the burn. Illinois Job Sheet 338-JS Prescribed Burning Plan will be used for documentation if developed by trained NRCS employees. Other trained professionals may use Illinois Job Sheet 338-JS or another plan format that contains the same information as Illinois Job Sheet 338-JS.

Conditions for the fire prescription will be determined using the table entitled "Acceptable Conditions for Prescribed Burns," Section 4, in Illinois Job Sheet 338-JS, Prescribed Burn Plan. Relative humidity, wind speed, and temperature are specified in the table. Winds must be relatively steady in velocity and direction. If winds are gusty and/or shifting more than 45 degrees from the prevailing direction, conditions are out of prescription, regardless of other factors.

Particulate matter 2.5 (PM 2.5) Landusers conducting a prescribed burn near or within Non-Attainment Areas in Illinois (<http://www.epa.gov/air/oaqps/greenbk/ilmo25.html>) will monitor the Air Quality Index (<http://www.epa.state.il.us/air/aqi/index.html>) and delay burning if the Air Quality Index is "Orange" or worse.

Fuel load will be at least 2,500 pounds per acre of fine fuel (dry grass and litter) with at least 50% standing (except for heavy fuel loads). Fuel loads above 10,000 pounds per acre of fine fuels, under normal circumstances, will have high flames and require additional resources to conduct the burn safely. Fuel conditions will be documented in Section I., Description of Burn Area, in Illinois Job Sheet 338-JS.

Remove all volatile woody species over 4 feet in height within 50 feet of the primary firebreak. Where removal of certain trees is not feasible, branches will be pruned to at least 2 times the expected flame length and residues scattered to assure fire does not reach the canopy of these trees.

Soil moisture will be sufficient to ensure protection of root crowns and ensure plant regrowth following burning. Soil moisture will be moist to the touch.

Erosion control measures shall be planned to prevent sediment from leaving the site where bare ground firebreaks are established or the burned area is highly erodible with little vegetation response expected. See NRCS Conservation Practice Standards 327 Conservation Cover, or 342 Critical

Area Seeding, for vegetation establishment and 655 Forest Trails and Landings, for techniques to control erosion where permanent firebreaks are installed in woodland. Timing of burn will be commensurate with soil and site conditions to maintain site productivity and minimize effects on soil erosion and soil properties (i.e., structure, soil moisture).

Firebreaks will be utilized to contain fire in the area to be burned. Mechanical, chemical, wetline, burned, natural, or structural firebreaks will be used alone or in combination to contain the burn. Refer to NRCS Conservation Practice Standard 394 Firebreak, for design specifications for firebreaks.

Weather forecast will be obtained the day before the burn, the day of the burn and for the next 48-hour period.

Weather conditions on-site will be observed and recorded immediately before and during the burn. Burning will be postponed, if weather conditions are, or are expected to fall, outside of the Prescribed Burn Plan prescription. The burn plan must prescribe weather conditions for the burn within the parameters of Illinois Job Sheet 338-JS Part 4.

Weather fronts - do not burn 12 hours before the passage of a weather front or after a weather front passes until the wind direction becomes constant.

Smoke management - burns will be planned, where possible, so winds will carry smoke away from roads, highways, airports, and occupied residences. When burning within 1 mile of an airport, secure necessary permission from airport authorities. Where smoke could affect sensitive areas, do not burn until adequate safeguards have been taken (traffic control, notification, removal of residents sensitive to smoke), and do not burn unless atmospheric conditions will allow for the rapid rise and dispersal of smoke (mixing height >1,600 feet and transport wind speed \geq 9 mph). Do not burn during temperature inversions that could trap smoke in the lower atmosphere. See the National Weather Service Fire Weather Forecast for mixing height and wind transport speed forecast.

Electrical or high power transmission lines within or adjacent to the site will be documented and the burn plan designed and applied so that large fire fronts or high, dense smoke columns will not cross under or contact these lines. Electrical discharge can occur due to high concentrations of carbon particles suspended in smoke columns. Wooden utility poles

must be protected from burning. Natural gas pipelines and other buried utilities will be documented and measures taken to protect the utilities and to avoid personal injury.

Hazards, such as roads, residences, windbreaks, woodlands, electrical power poles and transmission lines, fences, flammable conduits, pipelines, organic soils, etc., will be identified and indicated on the plan map.

Access to the burn area by all unauthorized personnel will be restricted.

Burning will occur during daylight hours only.

Time mop-up operations so mop-up will be completed before sunset. Extinguish all fire before leaving the site.

Threatened and endangered species that may occur on site will be identified and protected from fire and smoke. For prescribed burns in woodland, follow conservation measures established for the protection of the Indiana bat, a Federal endangered specie. If bald eagles are nesting in the area, follow conservation measures established for their protection. For more information, see Illinois Amendment 2 to the National Environmental Compliance Handbook.

Notify adjoining landowners, utility companies with facilities within the burn unit (overhead or underground), and residences and businesses within the first mile of the anticipated airshed prior to burning. Notify airports, local fire department districts, and public safety officials with districts within one mile of the site. Also notify fire and safety district officials and airports within the one to five mile airshed prior to burning. Provide adequate signage to affected roads.

Prescribed Burning Specifications must adhere to all applicable NRCS policies in the General Manual (190 GM Part 413 Prescribed Burning) and Illinois supplements to the General Manual (190 - General Manual, Amend. IL-1) as well as all applicable state and local laws, ordinances, and regulations.

If the planner is not an NRCS employee and does not use the IL-338-JS to develop the burn plan, the plan must contain at a minimum the following:

- Location of the burn
- Resource management objectives

- Pre-burn vegetation evaluation
- Identify sensitive areas
- Pre-burn preparation
- Required weather conditions
- Notification checklist
- Burning method to be used
- Firing sequence
- Job assignments
- Equipment checklist
- Plan for post-burn evaluation and management
- Necessary signatures of approval
- Signature by the landowner that they have been notified that they are liable for any damages as result of the prescribed burn.

Landowner or land operator will obtain necessary approval, permits, and variances prior to conducting the prescribed burn.

The Prescribed Burn Plan is specific to the area and for the burning season planned. If the plan is to be used for a subsequent burn season the plan will be revised to address the current situation.

OPERATION AND MAINTENANCE

To achieve benefits of the prescribed burn, other practices in a Conservation System need to be carried out as planned.

Under poor growing conditions, low plant vigor, and/or downward trend, range or pasture will require one full growing season of deferment from grazing, or incorporation into a prescribed grazing system.

Under good growing conditions and good plant vigor, grazing can begin as soon as cool-season grasses attain 6 to 8 inches of new growth and warm-season grasses attain 10 to 12 inches.

PERFORMANCE CRITERIA

The practice will be completed when the prescribed burn has been carried out according to the design specifications and the desired resource management objectives have been achieved or identified resource problems have been solved.

REFERENCES:

Open Burning, IL. Admin. Code, Title 35, subtitle B, Chapter I, Subchapter I, Part 237. See Subchapter I, Open Burning, at <http://www.ipcb.state.il.us/documents/dsweb/Get/Document-11987/>

Illinois Environmental Protection Agency – Opening Burning
<http://www.epa.state.il.us/air/permits/openburn>

Packard, Stephen and Cornelia F. Mutel. 1997. The Tallgrass Restoration Handbook, for Prairies, Savannas, and Woodlands. Island Press, Washington, DC, 463 pp.

McClain, William E. 1997. Prairie Establishment and Landscaping. Tech. Pub. #2, IL-DNR, Div. of Natural Heritage, Springfield, IL. 62 pp.
<http://dnr.state.il.us/conservation/naturalheritage/prairie/table.htm>

Higgins, K. F., Kruse, A. D., and Piehl, J. L. 1989. Prescribed Burning Guidelines in the Northern Great Plains. U.S. Fish and Wildlife Service Publication EC 760. 36 pp.
<http://www.npwrc.usgs.gov/resource/habitat/burning/index.htm>

Smoke Management Guide for Prescribed and Wildland fire 2001 Edition. 2001. National Wildfire Coordination Group Fire Use Working Team.
<http://www.nwrc.gov/pms/pubs/SMG/SMG-72.pdf>