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NebFact

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Conducting a Prescribed Burn on Warm-season Grass CRP Sites

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Prescribed burns on Conservation Reserve Program (CRP) sites composed of warm-season grasses have special precautions for a safe burn. The extremely high fuel loads of dry, highly volatile grass make preparation and weather conditions very important. Flame height from large headfires can exceed fifty feet. Speed of headfire movement can be faster than the prevailing wind, moving a mile in a few minutes. Heat can be so high that crews cannot approach a headfire.

Large 160-acre CRP sites often are completely burned just minutes after the headfire is completely lit. However, CRP land burning can be safer than many pasture burns if you follow proper procedures of mowing, raking, constructing wetlines, disking, and selecting favorable weather conditions.

This NebFact gives some special guidelines that will enhance the safety and ease of conducting a prescribed burn on CRP sites. Advance site preparation and proper weather conditions are critical to conducting a safe and effective prescribed burn.

General guidelines on planning a burn can be found in extension publication EC90-121, *Conducting a Prescribed Burn and Prescribed Burning Checklist*. This publication reviews many items that need attention when planning a prescribed burn, including:

1. legal obligations
2. equipment
3. burning prescription
4. fireguard construction
5. ignition techniques
6. smoke management
7. personnel requirements
8. notification of neighbors

However, warm-season grass CRP sites require special weather conditions and site preparation. This NebFact will outline weather conditions and site preparation that will reduce the risk when burning CRP

land.

Any management practices, such as mowing and burning, planned on CRP acres under contract must be approved by the appropriate agencies. All burning practices must be in the contract plan.

Advance Site Preparation

Select conditions and procedures that will cool the fire, making it easier and safer to burn warm-season grass CRP lands. Always seek the advice of persons experienced in planning and conducting prescribed burns.

Warm-season grass CRP sites typically will have 6,000 to 12,000 pounds of dry plant residue per acre remaining from previous growth. This is far more than the amount of fuel that is necessary to carry a fire. Flammability increases if switchgrass is part of the grass component. Switchgrass has a high level of hydrocarbons that makes it more volatile than other grass species.

Reduction and removal of excess fuel around the edge of the CRP site is needed. This makes it easier to control the backfires and headfires on the edge of the CRP site. Practices that can reduce the intensity of the fire at the edge of the site are desirable. CRP contract specifications generally prevent the removal of this residue by bailing.

Reduce Fuel Height

Flame heights are directly related to the height of the fuel or grass being burned. Mowing or shredding to reduce the height as much as possible will lower the height of the fire. Mow or shred a strip around the edge of the CRP site. This strip may be up to 50-70 feet wide. This width is necessary to provide room to move equipment and personnel in the mowed area.

Once the fire gets to the tall unmowed area flame heights are often so high that working close is impossible because of the heat. Risk of tripping or falling in standing CRP grass is much greater than in the mowed area. Work crews will work safer and easier in the mowed strips.

Develop these strips in the fall so the residue will settle down and partly decompose. Shredding cuts plant residue into smaller pieces than mowing with a sickle bar mower. These small pieces settle to the ground better and make fire control easier. Thus shredding is more desirable than using a sickle bar mower.

If the site is next to roads, fields, and other areas that will not burn or have low volatility, the width of the mowed strip may be reduced. However, the area needs to be wide enough for all personnel and equipment to work the fire and put unwanted fires out without getting close to or into the tall unmowed grass.

Use caution when mowing or shredding so that equipment does not start an unwanted wildfire. Check equipment to make sure there are no hot bearings, exhaust pipes, or other components that can start a fire. Mow or shred under conditions of high humidity and low temperature.

Shredders that throw residue to one side are best because they leave a strip that will have less fuel to burn. This area can be the initial starting strip in the ignition process. Side delivery rakes can be used to move the excess residue against the unmowed grass. This will leave a clean area. However, it will be difficult to work close to the fire in the windrow because of the heat generated.

Advance preparation of the site is necessary so that the site is ready. Focus attention on possible trouble spots so that when the proper weather conditions are present, the burn can be conducted safely.

Weather Conditions

Desirable weather conditions must be selected to control the fire. The extreme fuel load makes selecting weather conditions that cool and slow the fire desirable. The three main weather conditions that influence fire behavior are relative humidity, air temperature, and wind. Cool, damp conditions will work the best for prescribed burns.

Consider relative humidity first. High relative humidity will cool and slow the movement of the fire. The higher the relative humidity, the cooler the fire. Burns have been done in a light drizzle with a relative humidity of 98 percent. Under these conditions, the edges where backfires are started do not burn well and may even go out. However, if the mowed or shredded area can be burnt, when the fire gets to the unmowed area it will continue to burn.

A relative humidity above 60 percent is best. Starting in the morning when dew is still on the ground will provide high humidity and help maintain backfires. Make sure that the wind direction has stabilized before starting. By the time the dew is off, the backfires are in place and much of the high risk work is completed. Avoid burning CRP sites when the relative humidity is under 50 percent.

Air temperature (°F) influences fire behavior. Higher temperatures will cause the fire to burn faster. Select low temperatures to reduce the speed of the fire spread. Temperatures in the 40-60°F range require much more heat to ignite the grass, therefore reducing the rate of fire spread. Avoid burning CRP sites when the temperature is over 70°F.

Wind speed (mph) is the third weather parameter that needs to be considered. Wind speeds of 3-12 miles per hour are suggested. Avoid very calm conditions, because generally they are associated with variable wind direction. Wind direction must be constant. Avoid burning on any day that a wind shift is expected to occur. Wind shift will cause backfires to become headfires, and control will be very difficult and dangerous. Avoid conditions of wind speed over 12 miles per hour or the chance of a shift in wind direction.

Select a desirable wind direction for the CRP site. The site evaluation will indicate high risk areas that may be present. Highways, homes, buildings, CRP lands, and anything else that you do not want to burn or cover with smoke are high risk areas. Select a wind direction that will move the risk of fire and smoke away from these high risk sites.

CRP burns can be especially smoky and many fields have roads and homes near them. This makes the movement of the fire and smoke a very critical concern. (You may be held responsible if a person drives a car into the smoke on a road and has an accident.) Select a wind direction that will place high risk areas up wind of the fire. Some CRP sites have high risk areas on all sides. These high risk CRP sites should not be burned.

Verify with a reliable weather source the expected relative humidity, temperature, wind speed, and wind direction. Selecting weather conditions as outlined will greatly reduce risk and make it much easier to conduct a prescribed burn on CRP sites composed of warm-season grasses. The National Weather Service weather radio broadcasts often are the best source of weather data for prescribed burning.

Other Special Notes for CRP Land Burns

Safety is the most important factor in conducting a burn. The smoke will send up a signal that will attract onlookers. Be aware of fire fighters, bystanders, neighbors, and others who will come to watch. Keep all persons and equipment on the outside mowed edge of the CRP site. Never let persons or equipment go into the unmowed tall CRP grasses during a prescribed burn.

All persons and equipment must have escape routes from the fire to the outside safe areas that cannot burn. Remember that heat from the large headfire can make it so hot that people will need at least 200 feet of escape distance to get away from the heat.

Most CRP sites in Nebraska have soft wet spots. Large water tanks often are impossible to pull through the wet spots. Getting stuck with heavy equipment is very common. Have large tractors and heavy chains available to pull equipment out as necessary. Smaller spray tanks that can be quickly refilled may be necessary if wet spots are present. A black area that has been burned will not burn again. Keeping all equipment and people on such areas will provide greater safety.

Be Ready

Get the site ready by mowing or shredding the edge as early as possible. Find all equipment and personnel that will be necessary for the burn in advance. Develop the plan and submit it to the local fire chief for review and approval. Review the plan with the fire crew before the day of the fire. When all preparations are completed, wait for a day that will give you cool damp conditions with the correct wind direction and wind speed to conduct the burn. If weather conditions and site preparation are correct, then conduct the burn. Never be afraid to cancel the burn if weather conditions, equipment, and personnel are not suitable for the burn.

Fireguards

A fireguard is an area around the CRP site that will prevent the fire from escaping. On tall, warm-season CRP sites this fireguard should be at least 200 feet wide. Tilled cropland, green wheat, and many other types of fireguards can be used. However, in many CRP sites part of this fireguard will be the burned CRP grass at the edge of the site.

Starting at the farthest down wind side, a burning backfire will burn the grass residue. Keeping the fire from burning out of the CRP requires equipment and work crews. Often roads, ditches, and waterways may be used as a place to start the backfire. Crews must keep the fire from getting out of the desired area. The fire is lit slowly, no faster than the crews can manage. Fires moving to the outside are put out. Allow fires that move to the center of the CRP to continue to burn. This black strip then becomes the fireguard.

One common method to construct a fireguard is to use the wetline. Select a line about one third of the way in on the mowed and shredded strip. This line should have as little grass or fuel on the ground as possible. A line that has been run over with a tractor tire will have the residue compressed down to the ground also. Wet a line about three feet wide with a hose and sprayer from water spray equipment. Ignite the grass fuel just inside this wet line. Ignite within six inches of the wet area. Once the fire is burning keep all fire from crossing the wetline. Allow the fire to burn away from the wetline to the inside. The rate of fireline ignition is determined by how quickly the crews can put out undesired fires. Check and recheck the line to make sure smoldering fires do not escape to the outside. Continue these firelines completely around the area to be burned.

All prescribed burning has risk associated with it. However, selection of proper weather conditions,

advance preparation, having well trained and equipped crews, and using safe conduct and proper procedures will greatly reduce the hazards of burning CRP lands. Always seek the advice of a well trained and experienced person to assist with planning and conducting a prescribed burn. Refer to EC90-121, *Conducting a Prescribed Burn and Prescribed Burning Checklist* for more complete information.

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