

Safety Tips for Prescribed Burning

Prescribed burning, like any management practice, must include careful planning, understanding and care. For safety and protection, it is necessary for everyone on the burn to meet specific requirements.

Health Considerations. People with health problems such as high blood pressure, heart conditions, certain allergies, and respiratory diseases must not be allowed to participate. Prescribed burning is a strenuous, stressful and demanding job. Should a medical emergency occur, loss of people to provide assistance would deprive the burning effort of needed manpower. This could result in an escaped fire.

Clothing. Clothes made of natural fiber, such as cotton or wool, must cover the body, arms and legs. A cap or hat of natural material is necessary to cover hair. Gloves, preferably leather, and high-top boots are mandatory. Steel-toed safety boots are prone to accumulating heat. Pant legs should be worn outside the boots, not inside. In areas where burning includes timber, brush or trees, a hard hat should be worn.

Wearing clothes made of most synthetic fibers, such as polyester and nylon, is hazardous near fire. Some synthetic fibers can melt at temperatures common in prescribed burning. If a person wears synthetic material and it melts, severe burns will result. Although such incidents are rare, avoid the risk of wearing synthetic materials. Exceptions to the use of synthetic fibers are Nomex, a registered trademark of Du Pont, or other materials designed for fire fighting. These fire retardant fibers are used by fire fighters, military pilots, and race car drivers. Shirts, pants and coveralls are available for use in prescribed burning and are the best alternative.

Temperature. Relative humidity and temperature are related. As a rule, as temperature increases, relative humidity decreases. When temperatures exceed 80 degrees F, people perform at lower efficiency, tire quicker and require a higher intake of fluids. At temperatures below 55 degrees F, people have problems working effectively and if wet, can chill.

Communications. During a burn, two types of communication are desirable and can reduce hazards: contact with a location that can relay a request for emergency assistance, and contact between

crews working on the burn. Communications can be by citizens band, business band or similar radios. Cellular telephones are an alternative in some areas. Fast response by emergency personnel in case of a fire out of control or an injury can be vital.

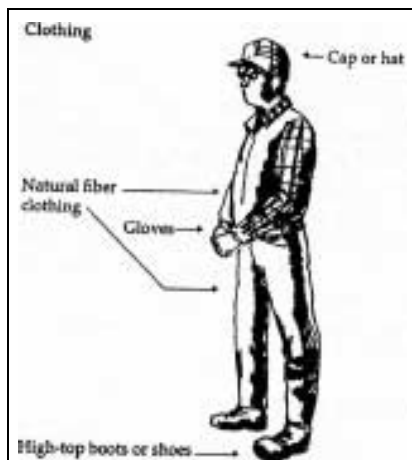


Figure 1. Wear clothing made of natural fiber and cover the arms, legs and body while working on a prescribed burn. A cap or hat to cover the hair is also required. (Illustrations courtesy of KSU Extension.)



Figure 2. Smoke crossing a public road during prescribed burn presents a hazardous situation to drivers and a legal liability to the person who own or controls the land being burned.

Emergencies. Several situations can occur during a prescribed burn which present potential danger to personnel. Escape routes, proper clothing, well-maintained equipment, communications, and good planning will limit the seriousness of most situations.

Probably the most frightening situation is to find yourself in front of a head fire. This can occur following unexpected wind shifts or when disoriented. Unless

the fire front is low and you can determine that the depth of the fire is small, never attempt to run or drive through the fire. High temperatures, smoke and lack of oxygen make it virtually impossible for a person on foot to move through larger fire fronts. A person who has matches or a lighter can start another fire. The person then can move into the burned area and remain there until the main fire passes.

A similar approach is appropriate if you are in a vehicle in running condition. If the vehicle is inoperable, setting a fire is still the best choice. If water is available, wet down an area around the vehicle and remain inside the vehicle. The best action is to avoid getting in front of a head fire.

Crew Preparation. Every person working on a burn should know the burning plan. This briefing should include designating who is in charge, the responsibility of each person during the burn and the responsibility of each person in case the fire escapes. In addition, each person should be briefed on communication channels and procedures for notifying emergency personnel.

Each person working on the burn must be familiar with basic prescribed burning and fire fighting techniques. Persons who are not familiar with these techniques pose a hazard to the entire operation as well as themselves.

Equipment Operation. Safe operation of all equipment is essential. Trained and experienced persons should operate tractors and other vehicles and communicate with other personnel. Power take-offs, belts and other dangerous parts should be shielded and marked.

Public Safety

Good public relations and avoiding situations which endanger the public or create legal liability are critical to successful prescribed burns.

Notification. Notifying neighbors of the intent to burn will reduce unnecessary concern and stress. Also contact the local fire district to establish who will request assistance and circumstances requiring the district's response. Avoiding unnecessary fire runs eliminates the hazard of responding to false alarms, improves relationships, and allows fire fighters to respond to other emergencies.

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THE GRAZIER

Smoke Management. Smoke is the greatest hazard to public safety. Airports and public roads are the major concerns.

Avoid burning within one mile of an airport. Beyond this limit, burning should be done only with wind direction which will blow the smoke away from the airport. Besides poor visibility created by smoke, turbulence and updrafts within the smoke column can affect pilot control of light aircraft.

Smoke moving over public roads affects visibility. Avoid burning which would result in smoke over a public road. Two alternatives are available when burning next to public roads. The most desirable is to burn with the wind blowing away from the road. The other alternative is to arrange for traffic control during the burning time. Such assistance is often difficult to obtain due to the length of time and number of personnel or law enforcement required.

Weather Safety

Weather conditions must be within acceptable limits in order to safely manage a prescribed burn. The main factors to monitor are wind speed, wind direction, cloud cover, relative humidity and temperature. These factors affect fire behavior and control. The table below summarizes acceptable limits for prescribed burns.

Wind. The speed and direction of wind are crucial to fire behavior. Burning requires steady speeds of 5-15 mph from a desirable direction. Forecasts of changes in wind direction, variable speed or gusty winds mean conditions are unacceptable. Relative humidity, temperature and frontal movements modify wind speed. As relative humidity decreases and temperature increases, the effect of the wind increases. Frontal changes can cause changes in wind direction, steadiness and speed.

Cloud Cover. As a rule, as cloud cover increases, ease of igniting and burning an area decreases. Cloud cover over 0.7

(more than 70 percent of the sky is covered) and ceilings below 2,000 feet are conditions to avoid.

Relative Humidity. Humidity affects the rate at which fuel dries. Moisture content of most grassy fuels changes quickly as relative humidity changes. During late morning and early afternoon hours, relative humidity can drop quickly, causing fire size and intensity to increase rapidly.

Forecasts. The two best sources of weather information are NOAA Weather Radio and the Rangeland Fire Danger Index. NOAA Weather Radio is a recorded broadcast of current weather conditions and forecasts. These broadcasts are received on special radios at three different frequencies. Weather radios are available from many sources.

Night Burning. Avoid burning at night. Darkness prevents drivers or people on foot from being able to find their way, see obstacles and landmarks, judge distances and assess the overall fire situation. Night fires also appear more severe than they are and result in more false alarms.

Special Concerns

Electrical power lines and oil and gas production and transmission equipment can pose hazards for prescribed burns. Special consideration during planning and conducting of a prescribed burn can eliminate or greatly reduce injury and damage.

Power Lines. When burning under or near electrical power lines or high voltage transmission lines, exercise extreme care. Three distinct situations can lead to injury or death.

Smoke Buildup. Smoke is made up of carbon particles which can conduct electricity. If the concentration of carbon is high enough, an electrical discharge from the power line to the ground, similar to lightning, can occur. The discharge hazard increases as line voltage and smoke increase or distance to the ground decreases. Such discharges have killed fire fighters.

To reduce the potential for discharges, the fire front should not be allowed to

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WEATHER FACTOR	MINIMUM	MAXIMUM
wind speed, steady from one direction	5 mph	15 mph
relative humidity	40%	70%
temperature	55°F	80°F
cloud cover	clear	0.7 (70%)
ceiling	2,000	unlimited

Table. A summary of the preferred weather conditions for a prescribed burn. (KSU Extension)

cross under power lines in a wide area. Selection of proper wind direction or lighting the fire parallel to the line can prevent major smoke buildup.

Water Hoses. When using water hoses below power lines, exercise extreme care to keep water streams away from overhead lines. Water conducts electricity, and the water stream will act as a conductor.

Downed Lines. When vehicles collide with poles or if poles burn, power lines can be downed during a prescribed burn. People or vehicles can run into downed lines without seeing them, and electrocution or serious shock injury can occur. Downed lines also can start wildfires by arcing.

If lines fall on fences, that creates another hazard. Electricity will be conducted by the fence wires for long distances. The distance depends on the type of posts (steel posts may reduce the hazard) and the contact between wires at corner and pull posts. As long as the wires are in contact, the potential for shock exists.

Oil and Gas Production. Burning near oil or natural gas production sites or around pipelines, pump stations and stor-

age facilities can be potentially hazardous. Explosions and/or fire at these sites can result. In all cases, during the planning of a prescribed burn, contact the company representative to determine what is necessary to prevent damage. Leaks, open vents, and plastic lines and parts are among the potential hazards.

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Scientist Elated Over New Fescue That Protects Against Tetany

Himag, a new fescue designed to protect cattle against the potentially deadly grass tetany disease, is proving to be even better than producers had hoped.

"We found 27 percent higher magnesium in the blood plasma of stocker cattle grazing Himag than those grazing Kentucky 31," said Dave Sleper, University of Missouri-Columbia forage breeder who worked with USDA scientists to develop the new variety.

"When I saw this data, it made my day!"

Those findings mean all the extra magnesium in Himag gets into the animal. And higher magnesium is key to protecting cattle against grass tetany.

In trials conducted at the University of Missouri's Southwest Center at Mt. Ver-

non, cattle grazing Himag vs. Kentucky 31 not only had 27 percent more magnesium in their blood, but they also had 18 percent more calcium (good for cattle nutrition) and 7 percent less potassium (the lower the potassium the better). Also, they had a lower ratio of potassium to calcium plus magnesium — again critical to warding off grass tetany.

"All the vital signs from Himag are good," Sleper said.

Himag also fared well compared to other tall fescue varieties, including those resistant to the endophyte fungus that causes cattle to go off feed in summer and to give them fescue foot disease in winter.

In the Southwest Center trials, Himag cattle had 13 percent more magnesium in blood plasma than those grazing either Mozark or AU Triumph and 23 percent more than those grazing Martin. Richard Joost, forage agronomist at MU, and Richard Crawford Southwest Center superintendent, organized the grazing trials. The fescues and samples were analyzed by Hank Mayland, USDA Agricultural Research Service scientist in Kimberly, Idaho.

As good as the results were, the scientists say the "real test" will be this spring with lactating cows.

"The lactating cow is the most susceptible to grass tetany," Sleper explained. "But we're optimistic and can hardly wait for the trials to start, because the previous grazing experiments were so successful. I'd like to run two year's worth of trials with Himag to make sure it works, but the way things have been going, we may release Himag to seed producers sooner."

By the way, Himag has also proved to be a prolific seed producer, yielding 1,400 pounds of seed per acre in Idaho.

"Grass tetany affects about 1 percent of grazing animals each year. That's not a big problem — until it hits your herd," Sleper said.

Dutch scientists first drew the correlation between low levels of magnesium to grass tetany disease in 1957. Once an animal gets the disease, it could die unless it gets a shot of magnesium almost immediately.

Himag simply prevents the problem by naturally giving the cow the magnesium she needs.

"We went through two cycles of selection," Sleper said. "We selected grasses with high levels of magnesium, then crossed those, and selected the best from those crosses. Then we crossed the best selections and picked Himag from the results of those crosses."

Editor's note: For More Information, contact Dave Sleper (314) 882-7320.