



## Fighting fire with fire: Use of prescribed burning to protect communities and firefighters

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### INTRODUCTION

Great Plains communities often rely on volunteer fire departments to prepare and defend against wildfire. Crew and equipment are often limited, making it important to maximize effort and effectiveness. Prescribed burning can be used during wildfires to allow safer suppression.

### BENEFITS

During a wildfire, decisions have to be made quickly. One decision could be to start additional fire- a strategic backfire. There are several reasons for using this type of prescribed fire.

1. Direct the wildfire. Backfires can be used to keep the wildfire from moving into areas where it would be much more difficult to fight, such as canyons or dense cedar stands. The wildfire can also be encouraged to move towards an area where fuel loads are less or absent (rocky area), making suppression easier.
2. Protect important assets. Communities can be protected with backfires. These need to be started well in advance of the fire approach if there is time. Ideally, these would be installed prior to wildfire season. Utilities and rural buildings can also be protected with backfires.
3. Move firefighting activity to a safer location. Rather than move firefighters and equipment into a canyon to fight a fire, a backfire can be lit where the fire will emerge from the canyon on more level terrain. This decreases risk of damage to equipment and injury to firefighters.

4. Reduce mop up time. Put the edge of the wildfire where it will be easy to mop up, such as along a road. Long-burning fuels such as logs and trees can be kept from catching on fire by placing the blackline between them and the fire.
5. Allow allocation of crew and equipment to more urgent locations once the blackline is in place.



**Fighting fire with fire can help contain, control, prevent wildfires, and reduce mop-up while improving firefighter safety.**

Using backfires under wildfire conditions requires planning in advance. Firefighters need experience with prescribed burning so they are familiar with the equipment and fire behavior from purposely set fire. Prescribed burning equipment, such as drip torches and fuel mix, need to be added to the standard set of brush truck

equipment. In general, blacklines should be installed in places that need few resources to defend and are easy to access with equipment.

A good understanding of when to use a backfire is also critical. Current and forecasted weather conditions and understanding the terrain are essential to know before starting a backfire.

### CONSIDERATIONS

Each wildfire is different. When using fire to fight fire, things to keep in mind:

- Will the firebreak be in the right place when forecasted changes in the weather occur (wind direction and speed, humidity)? Is there potential for a backfire to become a new headfire? Is a front expected with changing wind patterns? Will conditions be better later for starting the backfire and can it wait until then? Don't add fire if weather conditions are not right.
- Can sufficient crew and equipment be spared from other wildfire suppression efforts to conduct the burn? Can the wildfire be allowed to burn for a bit before the crew and equipment arrive to start the backfire?
- Is other equipment available to assist backfire efforts, such as a maintainer or tractor with disk?
- Are there blackened areas that can be tied together with the backfire to increase its length and effectiveness?
- Are there volatile fuels, such as cedars, near the proposed blackline? These can generate spotfires across the blackline.
- Is there time and access to burn the blackline ahead of an approaching wildfire? Will it have time to become wide enough to stop the fire? Backfires to stop wildfires coming out of canyons may need to be as much as a half mile away to allow sufficient time to widen the firebreak.
- Is the fuel load conducive to creating an effective black line? Are the fuels continuous? Too heavy to control, or too light to carry the backfire?
- Is the wildfire too intense to stop with a blackline at the proposed location? Sometimes waiting until later in the day or evening when higher humidity and lower wind speeds are more prevalent can make a blackline more effective due to reduced wildfire intensity.

- Is there time to consult with the landowner about where to put the blackline on the property? Landowners are great assets to learn about terrain, fuels, fuel loads, and other safety concerns during a wildfire. There may be livestock considerations or assets not easily observable.
- Is it worth the effort to install a blackline? Crew strength conservation should be balanced against resource protection needs. Is the water used for backfire installation better used elsewhere?

### PROTECTING COMMUNITIES

Great Plains wildfires are common. Oklahoma, for example, has averaged about 1000 wildfires a year for the last 17 years. The vast majority of these are small and only burn a few acres. But grasslands are highly flammable and under the right conditions wildfires can imperil communities.

Ideally, communities should formulate and implement a plan to defend the community from wildfire prior to the actual event.

When developing a community wildfire plan, the location of the community and the surrounding fuels need to be considered. Reviewing aerial maps is a good way to start the planning process.

- Is there agricultural land on one or more sides that is sufficiently bare and won't carry a fire?
- Are there volatile fuels in adjacent rangelands or along roads that lead into the community? These can move fire into housing areas. The location of fuels on the southwest to northwest sides of the community are most important, as the prevailing winds come from these directions during the dormant season when most large wildfires occur.
- Is the water supply sufficient for defending the community from wildfire?
- Are there good locations to install blacklines or burned patches at the end of the growing season? These can be moved from year to year- they don't need to be in the exact same location as long as they still serve a protective function.

Firefighting is both an ecological and sociological endeavor. By strategically using volunteer firefighter knowledge and experience and community support, Great Plains communities can reduce the risk of damage from wildfires.