WEEDS ARE REALLY NOT WAITING FOR A WILDFIRE TO POUNCE ON YOUR PROPERTY – but sure can seem so

Peas and carrots.
Milk and honey.
Wildfire and weeds.
They go together.

Weeds are superb opportunists. Wildfire often provides avenues for weeds to move into new areas or to greatly increase their numbers in already-established locations. Early monitoring of weed populations and early intervention can prevent development of new, long-lasting weed issues on a property.

Post-wildfire weed management is most effective for rangeland, pasture, or forested areas if you had a pre-wildfire weed management plan in place. If you didn't, consider creating one for all areas of your property at-risk of fire. Effective control of weedy plants prior to a fire decreases the chance of large infestations establishing after the fire.

Creating a weed management plan is not difficult and often pays significant dividends if implemented. Check out the article 'Weeds, Ways to Whip 'Em' in the *Barnyards & Backyards Rural Living in Wyoming* guide (www.barnyardsandbackyards.com) for great ideas on developing a pre-wildfire weed management plan.

What Happens During Wildfires

There are different speeds and intensities at which wildfires burn. The intensity and duration depend on weather, topography, and available fuels. Wildfires with small, flashy fuel types (they burn quickly) will usually have little effect on roots of perennial plants (perennial plants have larger, deeper root systems than annual plants) because the fire is not hot enough for an extended period of time to harm roots.

Grasses are a good example of small, flashy fuels. They often fuel fires that kill aboveground vegetation and leave roots unburned.

Hot, slow-burning wildfires, fueled by thick shrubs, dead logs on the ground, or a thick stand of trees, may kill perennial plants, destroying their roots and their aboveground vegetation.

What exactly happens after a hot, long-duration fire compared to a low-intensity wildfire? Once the long-duration fire is out, fewer plants remain to compete for resources (such as soil and sunlight), and a flush of nutrients (nitrogen for example) is released from burned plant material.

Cheatgrass – a Superb Opportunist

These factors create a great growing environment for many plants. Weedy species adapted to fast growth in high-nutrient sites can rapidly grow and reproduce under such high-nutrient availability/low-competition situations. Cheatgrass, or downy brome, is probably the most well-known of such invasive weeds. It responds quickly to freely available nutrients in the soil and may produce thousands of seeds per square yard. As an annual, no energy is wasted putting down long, well-developed root systems, but instead it grows quickly, produces seed, then dries out – sometimes leaving highly flammable fine fuels that can lead to further, more frequent, fires.

Sagebrush has difficulty reestablishing in areas with frequent wildfires. This can change a once-productive sagebrush grassland into annual grassland dominated by cheatgrass and populated largely by species that can withstand frequent fires.

After a low-intensity wildfire, many native plants resprout from their roots or singed crowns. Given enough moisture, they can quickly rebound and will compete against many weed species.

Detect, ID Weeds

Early detection and identification of weedy plant species is the first step in avoiding the ecosystem changes such as the cheatgrass example described above. This identification is a bit different than the typical weed identification in undisturbed rangelands or forested areas. Typical identification involves scanning an area for mature plants with identifiable flowers and using a reference such as a weed identification book, weed and pest employee, or extension office personnel to see if the plant is a weed that needs to be controlled. This tactic changes once a wildfire has burned and the smoke has cleared.

Fireweed is a common native wildflower in recently burned areas. Despite its name, it is not an invasive weed and doesn't need to be controlled. *(Photo: NPS, Jim Peaco)*

The next tactic is a similar approach, except you must scan the area for new plant growth, such as resprouting vegetation and seedling plants. With less vegetation, spotting and controlling younger plants before they mature will be easier. However, identification of young plants takes practice. You'll need to learn what younger growth stages of weeds look like. The same references can be used for proper identification. Purchasing an identification book that shows pictures of weeds at early growth stages can be very helpful.

Four Weed Control Methods

Control and management can begin once weeds are identified. There are many weed control methods. The most often-used control methods are physical, biological, cultural, and chemical control.

Physical control methods cause physical damage to structural parts of the weed. Physical methods include mowing, digging, hand-pulling, burning, and cutting. Physical methods such as hand-pulling or cutting allows land managers to selectively remove individual weeds from among other plants. Often, wildfires make control of weeds by physical means, such as mowing, easier since it is less likely you'll have to worry about harming desired plants. Physical control methods are very effective on small infestations of annual weeds. Annuals live for only one growing season and, if uprooted before seeds are set, will not be able to reproduce.

Biological control methods often use insect herbivores from weed species' native ranges to inflict damage to target weeds. Insects used for biological control (agents) undergo rigorous testing and evaluation before being approved for use in the United States to ensure they will not become problematic themselves. Biological control may be preferred in sensitive

Cheatgrass (Photo: Bruce Bosley, Colorado State University, Bugwood.org)

areas (such as near wetlands) where other control options may not be as desirable. Effects of biological control are relatively subtle and slow to develop, but self-sustaining populations of biological control agents are at work even while weed managers are elsewhere. Biological control agents often reduce the ability of weeds to reproduce and spread but don't often eradicate them. You may need to wait for weeds to grow large enough to support the insects before releasing them.

Cultural control includes prevention of weed populations through management of competitive desirable species to exclude, or reduce the negative impacts of, weed species in an area. Perhaps the most effective control method is to prevent weed populations from becoming established in the first place, so continued monitoring increases a landowner's probability of managing new populations early. Planting competitive forage species that reduce the probability of weed invasion is another means of cultural control useful for highly productive sites (please see the revegetation article page 36 in this publication).

Chemical control, or the use of herbicides, is the most widely used control method in pastures and rangelands. Herbicides are organic, synthetic chemicals toxic to plants. Aside from its effectiveness, chemical control has many advantages for weed management in natural systems including no soil disturbance, relatively low amount of effort expended, and great flexibility in the choice of the management system implemented. Chemical control can be highly selective. For example, certain herbicides will damage only broadleaf plants without harming grasses and vice versa. Some potential problems associated with chemical control include injury of non-target plants, chemical residues in soil or water, and public concerns for human safety. Such problems can be minimized by receiving adequate training in the selection, handling, and application of herbicides. Information regarding such training is available at local University of Wyoming Extension offices or at uwyoextension.org/psep.

Special effort should be expended in targeting new and isolated weed patches before plants reach maturity. Implement control with the methods described above and continue monitoring problem areas. Ensure weeds are confined only to currently infested sites and not spreading into new areas. Weeds kept in small, isolated patches are much easier to control than an entire property covered with weeds.

Practices described in this article should help reduce, remove, or prevent problem weeds on your property following a wildfire.

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