

# Safeguarding Against Wildfire

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When dry conditions and high winds follow periods of rain that grow dense grass, wildfires can ignite easily and spread rapidly. Under such conditions, fires can carry for long distances, cause extensive property damage and even result in loss of life. Periodic fires were common before European settlement. But the frequency of large wildfires (greater than 1000 acres) became very rare through most of the 1900s as a result of extensive suppression.<sup>1</sup> Researchers found that these suppression efforts resulted in greater fuel density and continuity, leading to large fires that increased the total acres burned by a factor of 3.5 to 4 between 1985 and 2014. Given the likelihood of wildfires throughout Texas, landowners need to be aware of the threats they pose. When wildfire occurs, preparation and timely action can determine how well you and your property fare. Primary considerations include: 1) safeguarding against wildfire, particularly structures; 2) factors affecting fire behavior; and 3) emergency actions when a fire front approaches. The following guidelines can help you safeguard your property and stay safe when wildfire occurs. A companion publication “Wildfire Behavior and Emergency Actions in Response to Wildfire” covers wildfire behavior and emergency responses and can be downloaded free from the AgriLife Bookstore.

## Making buildings fire resistant and building defensible space

Shake roofs are generally made of cedar or some other highly flammable wood. These should be avoided because, in wildfire situations, they become extremely dry and may ignite rapidly from an ember or fire brand.

Asphalt shingles are a better alternative. A metal roof will further reduce roof ignitions; however, with any type of roof an ember may roll off the roof and ignite adjacent cured fuels, such as the lawn. The siding, soffits, etc., of your house can also be vulnerable if made of wood, vinyl, or other flammable material. Steel siding provides a safer option. However, if the metal carries enough heat to flammable material under it, that material can ignite as well. Avoid accumulated fuel under porches or steps, as well as in gutters.

Trees, shrubs, firewood, grass, and propane tanks that are close to, or against, the side of the house can be problematic. Wooden doors and windows on the windward side of the building may provide a way for fire to start, especially during high intensity fires with long flame lengths. Cedar trees or bushes near the house can be extremely flammable when the weather is dry enough. To protect structures and other valuable infrastructure, it is important to provide defensible space as illustrated in Figure 1.

Defensible space is about fuel reduction—limiting the amount of flammable vegetation and materials surrounding the home and increasing the moisture content of remaining vegetation. The home itself and everything around it up to 200 feet is known as the “home ignition zone.” This 200-foot area contains three smaller zones:

**Zone 1** extends at least 30 feet outside the structure and all its attachments (wooden decks, fences, and boardwalks).

In this area:

- Plants should be carefully spaced, low-growing and free of resins, oils and waxes that burn easily. Any plant with aromatic foliage is likely volatile and may ignite easily.

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- Mow the lawn regularly. Prune trees six to ten feet up from the ground. Space trees 30 feet between crowns. Trim back limbs that overhang the house.
- Weep holes in the brick that allow condensation to get out can also allow fire from the lawn to get into the wall. During the dormant season, lawns may actually be a source of fine fuel. Keep lawns maintained close to the soil surface during the dormant season at least five feet from the house.
- Even better is to create a fire-free area within five feet of the home, using nonflammable landscaping materials or high-moisture-content annuals and perennials. However, when a high intensity fire comes close, even these high moisture plants may become dry enough to burn.
- Remove dead vegetation from under decks and within 10 feet of the house. Consider fire-resistant material for patio furniture, swing sets, etc. Remove firewood stacks and propane tanks—they should not be in this zone. If you are affected by water-use restrictions, consider xeriscaping with fuel-free areas close to structures.

**Zone 2** is 30 to 100 feet from the home, and plants in this zone should be low growing, well irrigated, and less flammable.

In this area:

- Leave 30 feet between clusters of two to three trees, or 20 feet between individual trees.
- Encourage a mixture of deciduous trees.
- Create ‘fuel breaks’, like driveways and gravel walkways.
- Prune trees six to ten feet up from the ground.
- Decrease the density of dry, fine fuels during the dormant season by mowing, grazing, or other means. Remember that even well irrigated grass can be a source of fine fuel during the dormant season.

**Zone 3** extends from 100 to 200 feet from the home and vegetation and other fuels in this area should be thinned, although less spacing between trees is required than in Zone 2.

In this area:

- Remove smaller conifers that are growing between taller trees. Remove accumulations of woody debris. Junipers (cedars) are commonly used in

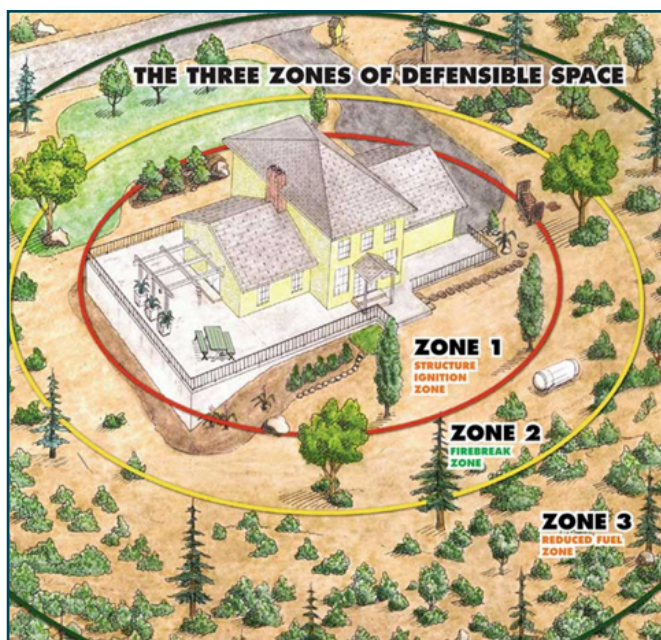


Figure 1. The primary goal for Firewise landscaping is fuel reduction. The home itself and everything 100–200 feet around it is known as the “home ignition zone.” In wildfire prone areas across the country, the home ignition zone extends up to 200 feet beyond the actual home structure (Figure courtesy of NFPA Firewise Communities).

windbreaks in the panhandle, and are notorious for catching wind-blown Russian thistle and kochia. This creates an extreme fire hazard in winter and early spring if this type of debris is not completely cleared away. Since junipers tend to create firebrands that can travel long distances and can be flammable during drought conditions, they should be kept at least 100 feet from a home.

- Reduce the density of tall trees so canopies are not touching.

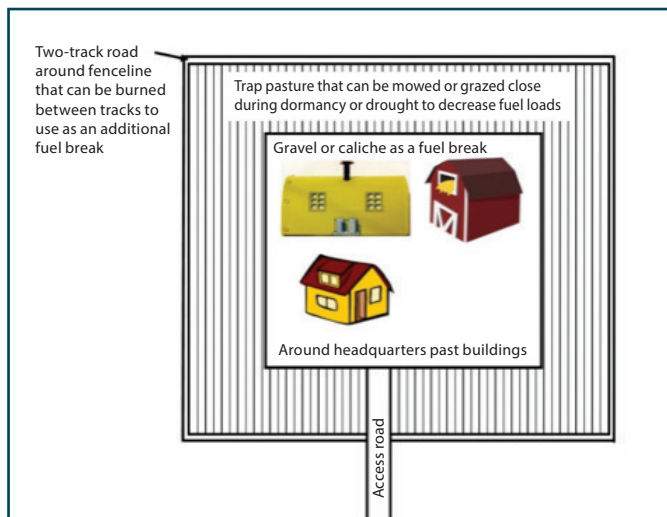
## Managing fuel loads, fuel breaks, and defensible areas

A fuel management strategy and infrastructure that facilitates it minimize the risk of high intensity fires reaching structures. These factors are critical to helping ensure against loss of property and even life.

Gravel or caliche that covers an area well beyond the outside of buildings and is thick enough to prevent plants from growing through it is a good fuel break. Be sure to place these fuel breaks so they do not cause accelerated

erosion if they are bladed or disked. Other defensible areas that may be used as fuel breaks include roads, oil production access roads, and even two-track roads, especially if the area between the tracks is burnt out during safe conditions. When combined with areas of surrounding vegetation that are bladed or disked to mineral soil (fire breaks) or grazed closely, graveled areas will often stop a ground driven fire, and be sufficient to protect the homestead from an oncoming wildfire.

However, these fire breaks will not, by themselves, stop a fire driven by high winds and low humidity that can blow smoldering embers more than ¼ mile in front of the headfire. These firebreaks may, however, provide an area against which a backfire can be set to eliminate fuels (referred to as “the black”) before the wildfire season (when conditions are safe). This may stop the wildfire when it burns right up to the black. Figure 2 provides an example of how to manage fuel loads to decrease the chance of catastrophic structure loss.



**Figure 2. An example of ranch headquarters design used to facilitate fuel load management and decrease the likelihood of high intensity fires reaching buildings.**

In this example, additional fire breaks may be placed further out in the surrounding rangeland to facilitate a backfire. You can also employ heavy grazing in the dormant season to increase the width of the area where fuel loads are minimized around the structures. One option would be to have several concentric fire breaks radiating out from the headquarters. To avoid repeated yearly defoliations on the same ground that could hurt rangeland productivity and accelerate erosion, choose different areas between fire breaks to burn or graze closely after frost each year. If a wildfire has potential to ignite structures, additional fire breaks can be used in burn-out operations to widen the black around threatened structures. These fuel breaks could also be an escape zone for livestock to avoid the fire front, provided the areas are large enough. In the fall or winter, locate and size these areas relative to their distance from structures as well as the number of livestock that might need to use them as a safe zone.

Cattle are often capable of finding safe areas on their own. Make quick provisions for livestock, without putting yourself or anyone else in danger. If necessary, cut fences and hope the livestock can drift in front of the fire front and into the black. Do not try to drive the cattle to safety and do not waste a lot of time setting backfires and cutting fences when a fire front is coming. No herd is worth a human life.

In a wildfire, remember to stay in the black. Though it may not protect you from hot gases and smoke, the best protection from the flames is to have a wide area around you where fuel has been removed.

## Works Cited

- 1 Donovan, V.M., C.L. Wonkka, and D. Twidwell. 2017. Surging wildfire activity in a grassland biome. *Geophysical Research Letters*. 44: 5986-5993. Doi: 10.1002/2107GL072901.

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