



Landscaping Guide



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Protect Your Home from Wildland Fire

Wildland fires are a natural part of many Canadian ecosystems. These ecosystems have evolved with fire and depend on it for survival as it renews and recycles nutrients. However, as more homes and communities are built in forested and rural areas, the risk of negative impacts from wildland fire is increasing across Canada.

FireSmart Canada has developed practical, effective, and science-based programs that provide you with tools to be better prepared when wildland fires occur. These include guidelines for home construction, home maintenance, landscaping, and evacuation planning.

A home or garden can be both beautiful and FireSmart. Taking actions to make a property resistant to wildland fire has other benefits too. In a 2024 survey conducted by Impact Canada, roughly half of respondents who said they had already taken actions like pruning low branches and thinning trees (or were planning to do these things), said they were motivated by wanting to make their property easier to maintain. Other motivators included improving appearance, reducing other risks like storm damage, and increasing property values.

About This Guide

This guide was developed to introduce you to FireSmart landscaping—a practical and science-backed approach to creating resilient outdoor spaces that are also beautiful. By carefully landscaping your outdoor spaces, your home is more likely to survive a wildland fire event. Many FireSmart principles are easy to implement, and every small action can have an impact.

Let's get started on building a safer, more sustainable landscape—one that thrives in harmony with nature, while lowering the risk of wildland fire losses.

Whether you are a homeowner, tenant, business, government, farmer, rancher, or Indigenous community, this guide is for you.

Why FireSmart Matters

The **Wildland Urban Interface (WUI)** is the area where human development meets or intermingles with the natural environment. Those living in the WUI are at an increased risk of wildland fires as fire can spread from the surrounding forest or grassland directly to the home if proactive steps are not taken. One in eight Canadians live in the WUI, and those living in Indigenous communities have an even higher exposure to wildland fire, according to research published in the Canadian Journal of Forest Research. Those building and living in or near the WUI should take special precautions to protect their homes, communities, and livelihoods from the negative impacts of wildland fire.

By now you may be thinking,

"I don't live beside the forest, I live in town or the city. How is this relevant to me?"



DID YOU KNOW?

Most homes that are damaged or destroyed by wildland fire are not impacted by the advancing wall of flame, but by ignition from flying sparks and embers.



Fire embers may seem small, but they should not be underestimated. Embers have been observed to travel kilometres ahead of wildland fires; starting their own fires in advance of the main flame front. This ignition source is often how more urban locations become affected by wildland fire.

Negative impacts from wildland fire have occurred in many communities across the country over the past decade in locations such as Fort MacMurray, Lytton, and West Kelowna, among others. Losing homes and businesses is a tragedy that takes a toll on the entire community. Examining which structures survived, and which structures were lost after a catastrophic wildland fire helps us better understand what steps to take to increase community resiliency.

What to consider when creating a FireSmart Landscape

Fires need fuel. Homes that are surrounded by dense, highly flammable plants and trees, places them at a higher risk to be negatively impacted by wildland fire. Various landscaping decisions, from plant choice to mulch selection and placement, can help reduce the risk of wildland fire spreading to your home and property.

There are many factors to consider when planning a garden or landscape. Several of the decisions you make will depend on the area of the country you live in.



Topography

The arrangement of the natural and human-made physical features of an area. This will affect your plan for your garden or landscape. Fire travels much faster uphill than it does downhill or on flat ground.



Water Usage

Plants that hold more moisture are slower to ignite, so keeping your landscape watered properly is a FireSmart principle. When choosing plants, consider your local climate and how much demand it puts on the water system in your area.



Plant Exposure/Aspect

Whether an area is sunny or shady, windy or protected, exposure plays a role in what plants will flourish. Exposure and aspect can impact how quickly a plant's foliage can dry out.



Maintenance

Plants vary greatly in the amount of care required to keep them looking attractive. Select plants that realistically meet your maintenance time constraints (proper pruning and watering, as well as removing dead plant debris), are key parts of maintaining FireSmart landscaping. Ensure that the plants chosen are not listed as invasive species within your local area.

Additional considerations, such as legislation and wildlife, can be found near the end of this guide.

The Home Ignition Zone

The FireSmart Home Ignition Zone identifies three priority areas that must be managed to help reduce potential wildland fire impacts to your home.

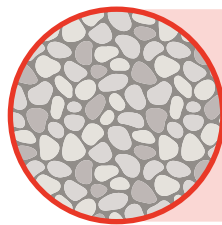
While the **Immediate Zone** is the most critical, residents and landscape professionals should focus on reducing the risks in each of the three zones. This may mean working with your neighbours in a coordinated effort.



Immediate Zone: 0 – 1.5 metres

The **Immediate Zone** is a non-combustible area that starts at the house and extends out to a 1.5 metre perimeter around the home and attached structures, including decks and garages. Reduce the chance of wind-blown embers igniting your home by starting with these proactive steps:

- Clear vegetation and combustible material down to mineral soil and cover with non-combustible materials like gravel, brick, or concrete
- Avoid planting woody shrubs or trees in this zone
- Dense vegetation like shrubs or flower beds can quickly become ember traps, igniting from falling burning debris. **Remove if possible.**



Easy win:

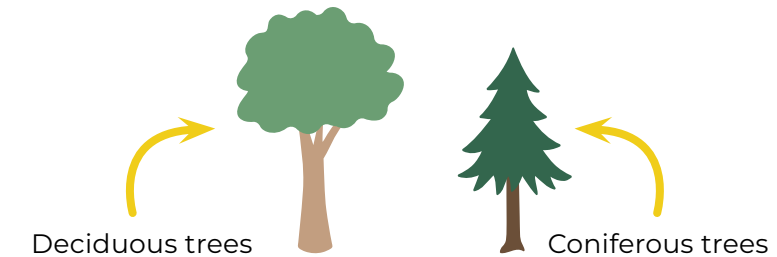
Ideally, a home is surrounded by 1.5 metres of gravel, concrete, decorative rock, or brick. If you have plant pots/boxes within this area, move them to the **Intermediate Zone**.



Intermediate Zone: 1.5 – 10 metres

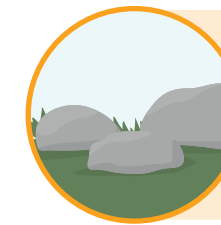
Elements in the **Intermediate Zone** should be managed so they don't carry fire or radiant heat to your home. Here are a few actions you can take to reduce your home's vulnerability:

- Plant fire-resistant vegetation and select non-combustible landscaping materials
- Avoid incorporating any woody debris, including mulch
- Keep combustible items like firewood piles, construction materials, patio furniture, tools, and decorative pieces out of this zone
- Create a non-combustible ground cover, like gravel, underneath and 1.5 metres surrounding trailers, recreational vehicles, and sheds
- Favour deciduous plants as they are less flammable than conifers



Deciduous trees

Coniferous trees



Easy win:

Swap out flammable mulch, such as bark and straw mulch, for non-flammable materials. Dry mulch ignites and burns much faster than damp mulch. Decorative rock doesn't burn.



Choosing the Right Mulch

Bark mulch, pine needle mulch, straw mulch, and other plant-based mulches offer many benefits to gardens. However, these mulches are highly susceptible to fire, thus increasing risk to your home.



✗ Flammable mulch



✓ Non-flammable gravel

The best solution is to consider using non-flammable gravel or decorative rock to reduce your risk.

What are Fire-Resistant Plants?

Fire-resistant plants are those that do not easily ignite from flame or other ignition sources. Please note that this does not mean fire-proof (unable to burn). These plants can be damaged or even killed by fire; however, their foliage and stems are less likely to contribute to overall fuel availability and fire intensity.

Characteristics of fire-resistant plants:

- Moist, supple leaves
- Minimal dead wood and tendency not to accumulate dead or dry material
- Water-like sap with little or no odour
- Low amount of sap or resin material

Examples: Trembling aspen, maple, tulips

Characteristics of highly flammable plants:

- Contain fine, dry, dead material within the plant
- Plant stem, branches and leaves contain volatile waxes, terpenes, or oils
- Aromatic needles
- Gummy, resinous sap with a strong odour
- Loose papery bark

Examples: Pine, fir, spruce, juniper, cedar, broom, tall grass

Avoid landscaping with highly flammable plants around your home.

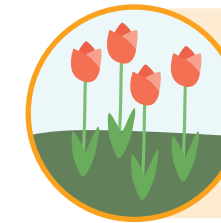
Saving Water While Staying FireSmart (Xeriscaping)

Water usage is an ongoing concern in many fire-prone areas of the country. In some regions, watering restrictions or bans during summer months have become commonplace. Dry landscape vegetation increases wildland fire risk, making water conservation even more important. This means it's important to consider water usage when planning a FireSmart landscape. Outdoor spaces can be both beautiful and water efficient.

Xeriscaping is a method of gardening/landscaping that doesn't sacrifice beauty to conserve water. The principle involves selecting trees, shrubs, and flowers with low water requirements and planning drainage and permeable surfaces to use rainwater runoff efficiently. The principles of xeriscaping can be applied to any landscape style and can be as plain or elaborate as desired.

The average Canadian uses 401 litres of treated water per day (the equivalent of four full bath tubs of water) according to Statistics Canada. In drier areas of the country, this average can rise to 850 litres of water per day. In the summer, 80% of the water consumed is used outdoors to wash driveways and vehicles or to water lawns and flower beds.

Help conserve water by implementing xeriscaping principles at home.



Easy win:

If you choose FireSmart plants with higher water requirements, group them together so you can water your garden/landscape more efficiently.



Sprinkler systems and potential benefits

Ground sprinkler and irrigation systems can function as a tool to reduce wildland fire risk, but homeowners should not rely on them to protect a home from a fire. Water use may be limited during an emergency and the use of sprinkler systems are not failproof. They also do not make up for having flammable plants or mulches on a property.

Sprinkler and irrigation systems are most effective if combined with vegetation management.

If installing a ground sprinkler system, it's important to make sure access to control boxes and valves would be easily visible to firefighters in the event of a wildland fire. Irrigation systems should not be turned on during a wildland fire because in some areas they can pre-emptively drain water supplies. Instead, leave the systems in place and allow structural firefighting experts to make strategic choices.

Turf and Water Use

A well-maintained lawn can serve as an effective firebreak as part of your FireSmart landscape. Lawns can also add to the enjoyment of your yard, benefit wildlife and insects, add to property values, and reduce energy requirements. A well-maintained lawn can be naturally fire-resistant. Grasses shorter than 10 centimetres in height are less likely to burn intensely and a green lawn is less flammable.

Many lawns consume high amounts of water in comparison to most other plants. Look at your lawn and ask yourself these questions:

- How much of my lawn is walked on or played on?
- Does my dog need to relieve itself on grass, or can a gravel-type surface be used instead?
- Are there areas that are difficult or dangerous to mow?
- Could sections of the lawn be replaced by fire-resistant groundcovers, shrubs or ornamental grasses that require much less water and maintenance?
- Are there areas where hard surfaces like walkways or patios would make the living space more practical?



Extended Zone: 10 – 30 metres

The goal in the **Extended Zone** is not to eliminate fire, but to slow its spread and reduce its intensity. If your property extends into this zone, a few important steps you can take include:

- Selectively remove trees to create at least three metres of horizontal space between the single or grouped tree crowns. This may require the help of an arborist or forestry professional
- Prune all branches to a height of two metres from the ground
- Regularly clean up accumulations of fallen branches, dry grass, and needles to eliminate potential surface fuels

Continue to apply these principles if your property extends beyond 30 metres. Work with your neighbours in overlapping zones and seek guidance from a professional if affected by other conditions like steep slopes.



Easy win:

Clean up/remove fuels on the ground such as fallen branches and dead vegetation.



Tree selection

No plant is fireproof, but certain trees contain resin or flammable oils that make them burn at a higher intensity during a fire. It is best to avoid or limit these trees on your property, which include cedar, yew, select firs, juniper, pine, and spruce.

The best trees to plant are fire-resistant deciduous trees such as poplars, maples, oaks, ash trees or fruit trees. While these trees can still catch fire and burn in the right conditions, they generally don't burn as intensely. Deciduous trees can also provide shade and aesthetic value while reducing your wildland fire risk.

Topography is another important consideration when deciding where to plant or remove trees. Fire moves fastest uphill – the steeper the slope, the faster a wildland fire will spread. Homes on or near hills face the greatest risk from wildland fire. If your home is located on or near a hill, consider taking extra measures such as removing trees adjacent to the slope and planting fire resistant vegetation.



Pruning information

Regardless of what trees are present on a property, maintenance is important in reducing risk from wildland fire. Trees should be pruned by removing the lower branches, clearing two metres between the ground and the first branch. This disrupts 'ladder fuels' which create a path for fire to travel from the ground up to the top of a tree (known as the crown).

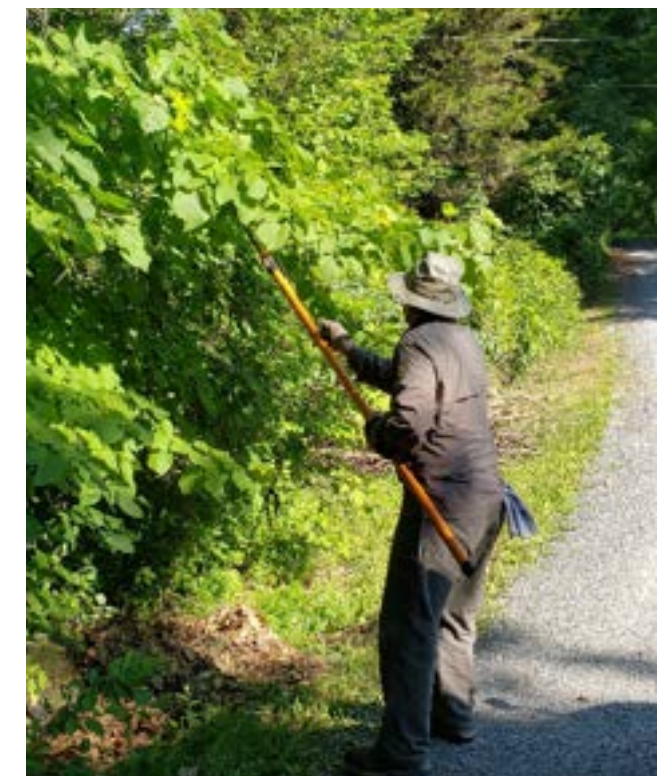
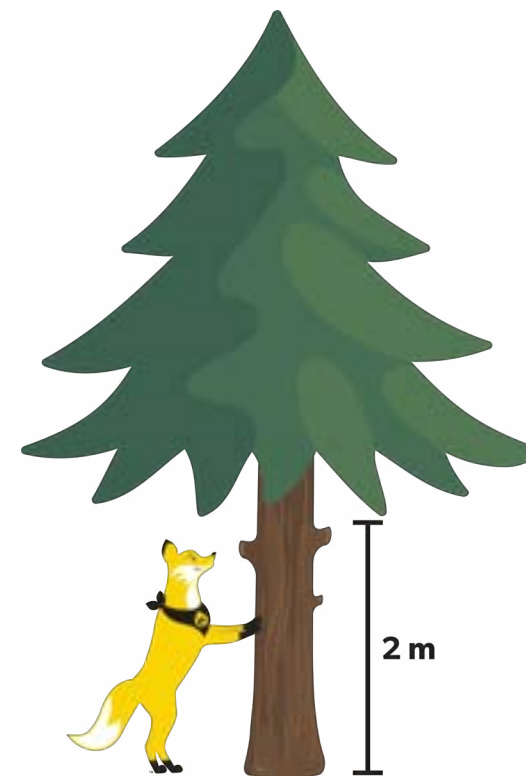


DID YOU KNOW?

Pruning has other benefits. Proper pruning under the right conditions can help extend the lifespan of a tree or bush, in addition to reducing fire risk or storm damage.

Pruning all trees within 30 metres of your home is recommended. If possible, prune all trees within 100 metres of your home.

Flowering trees, such as chokecherry or magnolia, may require more specific timing to ensure healthy bloom in the spring and summer. Other plants, including hedges, bushes and vines can also be pruned to keep them manageable and healthy, promote air circulation and remove dead and dry material.



Additional Considerations

Check with your local authority

Your municipality, local authority, or land management authority is the first point of contact for matters related to land use and development planning. They will be your primary resource for information regarding planning, renovations, guidelines, and codes. It's important to be aware of local bylaws, covenants, and provincial/territorial legislation throughout this process if you're considering changes such as tree removal, paving, or fencing.

Choosing plants

When selecting plants for your landscape, ensure that you select plants that are appropriate to your area and hardiness zone. The hardiness zone indicates the ability of a plant to withstand an average minimum temperature. Currently, there are two systems used for classifying hardiness, the Canadian Hardiness Zone and the United States Department of Agriculture (USDA) Hardiness Zone System. This guide references the Extreme Minimum Temperature Zones map, a Canadian version of the USDA system that most gardening enthusiasts, commercial horticulturists, and industry professionals use.

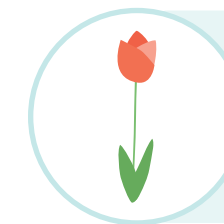
When choosing a plant, pick a plant that falls within your zone or the next colder zone. For example, if you are in Calgary, you're in the USDA zone 3. Therefore, you can choose plants that are suitable for zones 1 to 3. You should also pay attention to requirements like sunlight, soil-type, and maintenance requirements when choosing plants. Healthy plants are less likely to accumulate dry and dead materials.



Pollinators

Native bees, butterflies, and wasps are all wild pollinators that help plants thrive and help us grow food. Unfortunately, pollinator populations are declining worldwide due to habitat loss, pesticide use, climate change, and pathogens, according to the Nature Conservancy of Canada. You can help make a difference with your garden and greater landscape.

While leaving plant material such as leaves and branches on your lawn can benefit pollinators by providing shelter, it may also increase your risk of wildland fire. If you wish to keep some vegetation for insects, consider keeping the pile moist and isolated from other flammable materials.



Easy win:

Help native pollinators, such as the Canadian bumblebee, thrive by planting species like purple coneflower or goldenrod, which are also fire-resistant.



Working with neighbours

Sometimes you'll be able to make decisions about your yard and landscape by yourself. However, in cases of overlapping Home Ignition Zones, you'll need to work with your neighbour or community. [FireSmartCanada.ca](https://www.fire-smart-canada.ca) has a wide variety of information and resources that you can share with your neighbours to bring them on board with your plans, such as removing or replacing a flammable privacy hedge with fire-resistant materials.

Composting

Composting is a great addition to a FireSmart yard, allowing you to recycle nutrients while decreasing the amount of dead and drying material on the ground around your home. If you are composting in your yard, do not store the composting bin in the **Immediate Zone** as compost bins have been known to catch fire under the right conditions.

Mature compost, which has broken down enough to be dark brown and no longer recognizable, is considered relatively FireSmart and good for use in the **Intermediate and Extended Zones**. Keep compost piles/bins watered to advance the composting process and to support FireSmart practices.



Invasive and Noxious Plants

Invasive species can disrupt entire ecosystems. Over 60% of Canada's invasive plants were introduced over the last 150 years based on their value for food, medicine, ecosystem services, and aesthetics, according to the Canadian Council on Invasive Species.

Avoiding invasive and noxious plants is another important consideration when planning an environmentally responsible garden. It's always important to consider the local context when choosing plants. Be aware that plants of concern can vary from region to region and that species commonly described as 'self-spreading' may displace native species as they spread beyond your property. The Canadian Council on Invasive Species program, *Be PlantWise*, helps prevent the spread of invasive plants and offers guidance for different regions in Canada.

Fences and Outdoor Furniture Placement

Fences can help provide privacy and are a smarter choice than flammable vegetation, such as hedges. However, fencing made of combustible material, such as wood, can create a flammable 'wick' to a home. Ideally, a fence should be made of brick, stone, concrete, stucco, or metal. If a property includes a combustible fence, a 1.5 metre metal gate or a full 1.5 metre gap adjacent to the home can create a fire break that provides further protection.

Patio furniture (such as chairs, tables, and umbrellas) help create liveable spaces outdoors. However, these items are often extremely flammable. As with mulch or dry grass, these objects can collect embers and quickly catch fire during an approaching wildland fire. Therefore, patio furniture should never be stored within the **Immediate Zone**.

Many people choose to store cushions in fire-resistant deck storage boxes when not in use. This helps prevent mold and damage and can be FireSmart if you choose a storage solution made from fire-resistant material. If you have combustible furniture in your yard, storing flammable materials inside during a wildland fire can help reduce the risk to your home if you need to evacuate. Remember to add this action to your home fire preparation or evacuation plan.

Wildlife and Your Landscape

The WUI is an area that tends to naturally attract wildlife. When thinning and pruning in the **Extended Zone**, you may increase the available habitat for wildlife due to increased sunlight and biodiversity. Animals such as bears or deer may be attracted to the area. If you have fruit trees or berry bushes, consider these tips to reduce negative encounters with wildlife:

- Pick fruit and allow it to ripen indoors or pick daily as it ripens. Do not allow fruit to accumulate on the ground.
- If you no longer want to manage your tree or bush, consider replacement with a native, non-fruit bearing variety. However, keep in mind that any tree should be maintained and pruned to reduce risk from wildland fires.



Using this Guide

A common misconception about FireSmart is that protecting your home from wildland fire means sacrificing beauty and function. This is a myth; you don't have to choose one or the other! By implementing FireSmart principles you can enjoy a functional landscape with lush greenery, privacy, and vibrant outdoor spaces—all while reducing your wildland fire risk.

There are so many ways to take action that it is easy to get overwhelmed. Taking small steps today can make a significant difference at home. Starting with the **Immediate Zone** (first 1.5 metres around a structure) is the most effective way to protect against wildland fire. Making FireSmart landscape choices can also make property maintenance easier, improve home values, and prevent damage from other hazards like storms and wind.

We've provided additional resources that can help you find detailed information about topics like xeriscaping, invasive species, pollinators, tree care, and planting relevant to your local area.

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- Statistics Canada. Table 38-10-0271-01 Potable water use by sector and average daily use. Retrieved from <https://doi.org/10.25318/3810027101-eng>
- Zipperer, W., Long, A., Hnton B., Maranghides, A., & Mell, W. (2007). Mulch flammability. In: *Proceedings of Emerging Issues Along Urban-Rural Interfaces II: Linking Land-Use Science and Society*, 192-195. Retrieved from <https://research.fs.usda.gov/treearch/31510>

Additional Resources

Online resources

- Canada's Plant Hardiness Zones
planthardiness.gc.ca/?m=1
- Canadian Council on Invasive Species
canadainvasives.ca
- Canadian Nursery Landscape Association
cnla.ca
- FireSmart Canada
firesmartcanada.ca
- First Nations Emergency Support Services
fness.bc.ca
- Get Prepared Canada
getprepared.gc.ca
- Indigenous Leadership Initiative
ilinationhood.ca
- Insurance Bureau of Canada
ibc.ca
- Intact Centre on Climate Adaptation
intactcentreclimateadaptation.ca
- Natural Resources Canada
natural-resources.canada.ca
- Nature Conservancy of Canada
natureconservancy.ca
- Tree Canada
treecanada.ca

Books and articles

- Creating the Prairie Xeriscape*
Sarah Williams, Lone Pine Publishing 1997
- Fire-Resistant Plants for Home Landscapes*, Pacific Northwest Extension, 2006
- Held by the Land: A Guide to Indigenous Plants for Wellness*
Leigh Joseph, Wellfleet Press 2023
- Manual of Woody Landscape Plants*
Michael A. Dirr, Stipes Publishing 2009
- Trees in Canada*
John Laird Farrar, Fitzhenry & Whiteside Limited and Canadian Forest Service 2000
- WUCOLS IV: Water Use Classification of Landscape Species*
L.R. Costello and K.S Jones, University of California 2014
- Xeriscape Gardening – Water Conservation for the American Landscape*
Connie Lockhart Ellefson, Thomas L. Stephens, Doug Walsh, Ph.D., Macmillan Publishing Company 1992
- Xeriscape Color Guide Denver Water Board*
Fulcrum Publishing 1998

Gardening associations

The American Horticultural Association website (ahsgardening.org) provides an updated map with websites and contact information for the following Canadian groups:

- Master Gardeners Association of British Columbia
- Master Gardeners Association of Alberta
- Master Gardeners of Saskatchewan
- Master Gardeners of Ontario
- Atlantic Master Gardeners Association



WWW.FIRESMARTCANADA.CA