CIR 1478

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Fire in the Wildland-Urban Interface: Reducing Wildfire Risk While Achieving Other Landscaping Goals[1]

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What Do You Value In Your Landscape?

Many people move to woodland or other natural areas to be closer to nature and to escape urban stress. These homeowners tend to value landscaping that emphasizes scenic beauty, wildlife viewing, privacy, and shade. They may prefer native plants around their homes to enhance wildlife habitat. They may be interested in conserving water and energy for economic and environmental benefits. There are several landscaping programs that help homeowners achieve these goals, such as the Backyard Wildlife Habitat™ program that focuses on improving wildlife habitat around the home to enhance wildlife viewing.

Life in the wildland-urban interface (areas where homes or other structures are adjacent to or intermixed with forests or other rural land uses) provides multiple benefits for those that choose to live there. However, along with these benefits come risks. Risk of wildfire is high in many parts of the South due to the region's fire-prone ecosystems. Many plants that evolved in these ecosystems actually benefit from periodic fire, and they sometimes have characteristics that support the spread of fire, such as highly flammable leaves or branches. The landscape surrounding a home or other structure can become fuel for a wildfire, contributing greatly to the risk of damage to the structure. Vegetation that is overgrown, continuous, and close to a home may improve wildlife habitat or conserve energy, but it also increases the home's vulnerability to wildfire. One way to reduce fire risk to homes and other structures is to incorporate principles of firewise landscaping, which is part of the national Firewise program. Firewise landscaping incorporates fire safety into landscape design. It may not be necessary, however, if you are located within an urban or suburban area and are completely surrounded by other developments. In that case you can give priority to other landscape goals. Can a homeowner incorporate firewise landscaping without sacrificing other landscaping goals? This fact sheet compares several home landscaping goals and their

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key principles to firewise landscaping principles to help answer this question.

Comparing Firewise to Other Common Landscaping Goals

In this section, we give a brief overview of several different landscaping goals, including wildfire risk reduction (Firewise), wildlife habitat creation or enhancement, water conservation, and energy conservation. We introduce the main principles and compare each to firewise landscaping. We also briefly discuss examples of programs and guidelines that incorporate multiple goals. Table 1 on page 8 lists some of the apparent conflicts between firewise and different landscaping goals. More detailed information about each landscaping goal can be found in the publications or Web sites listed in the Additional Resources section at the end of this circular.

Wildlife risk reduction (Firewise)

A key principle when landscaping to reduce wildfire risk, otherwise known as firewise landscaping, is to create an area of **defensible space** that extends at least 30 feet outward from the house in all directions. Within this defensible space, vegetation should be modified to break up the continuity of plants. The extent to which vegetation is modified is generally determined by distance from the house. Through ongoing maintenance, highly flammable plants should be removed or isolated, vertical (Figure 1) and horizontal separation between plants or plant groups should be created and dead plants and plant materials (e.g., fallen leaves, dead branches) should be removed (Figures 2a-b). These practices help to disrupt the spread of fire through the landscape, allowing the home to better survive on its own and providing firefighters with sufficient room to operate. The Firewise program (http://www.firewise.org), sponsored by the National Wildfire Coordinating Group (NWCG), provides information to help homeowners, fire fighters, and communities incorporate firewise landscaping.

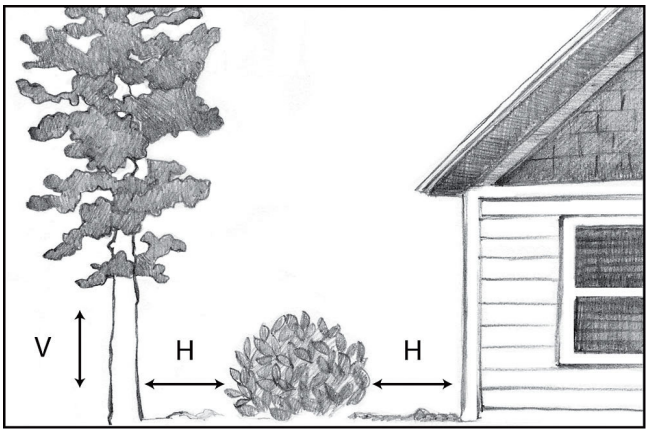

Figure 1. Vertical separation (V) should be maintained between plants and plant groups by removing all ladder fuels from this area and pruning lower branches on trees up to 10 feet from the ground. Horizontal separation (H) should be maintained by separating groups of plants or landscape beds by nonflammable areas (e.g. decorative gravel or stepping stones) and keeping plants at least 2 to 5 feet out from the home. Credits: UF/IFAS 2006.

Figure 2.a Credits: Larry Korhnak (c) UF/IFAS 2006.

Figure 2.b

Figure 2. The landscaping around this house was modified to reduce fire risk. The dense shrubs and flammable saw palmettos (*Serenoa repens*) that were close to the house (A; before photo) were removed and replaced with low-growing shrubs and groundcovers that are low in flammability (B;after photo). The area of defensible space was also expanded. Because the area shown in these photos is within 30 feet from the house, almost all of the saw palmettos were removed (a highly flammable plant). However, in other areas of the property outside the defensible space small patches of palmettos were retained for their wildlife and aesthetic value.

Wildlife habitat creation or enhancement

When landscaping to create or enhance wildlife habitat, the main objective is to provide the key resources that wildlife require - food, cover, water, and space. A national landscaping program that focuses on creating wildlife habitat is the Backyard Wildlife Habitat Program of the National Wildlife Federation® (http://www.nwf.org/backyardwildlifehabitat). While most wildlife landscaping programs seek to increase overall wildlife diversity in the yard and surrounding areas, landscaping programs also exist that are designed to increase populations of specific types of wildlife (e.g., woodpeckers, butterflies, songbirds). Regardless of which program is used, principal wildlife habitat practices are to limit the amount of lawn (lawn offers very little food or cover for wildlife), provide water, plant native plants that provide food and/or cover (Figure 3), and remove invasive exotic plants (they may take over natural habitat). In addition to providing wildlife habitat, native plants can help conserve local plant biodiversity and reduce required maintenance if appropriate species are selected (i.e., “right plant, right place”). The use of native plants in fire-prone ecosystems, however, may conflict with firewise principles, as some natives adapted to such ecosystems are highly flammable. Vertical layering of vegetation in the landscape (Figure 4) and retention of dead plant materials (standing dead trees and brush piles) near the home are recommended because they provide cover and habitat for foraging and nesting. However, these recommendations conflict with firewise landscaping, which advocates vertical separation and removing flammable dead plant materials from the defensible space.

Figure 3. By planting landscape plants that provide food for wildlife, you can enhance the value of your yard as habitat. The Indian blanket flowers (*Gaillardia puchella*) in the forefront of this picture attract butterflies, while beautyberry (*Callicarpa americana*) near the house provides berries for birds and other wildlife. Credits: Larry Korhnak (c) UF/IFAS 2006 .

Figure 4. To the left of the house, there is almost continuous vegetation from the ground to the tops of the trees. This vertical layering provides good wildlife habitat, but it is not considered firewise. Credits: Larry Korhnak (c) UF/IFAS 2006.

Water conservation

The primary goal of landscaping for water conservation, commonly called waterwise landscaping or xeriscaping, is to create landscapes that use only minimal supplemental water resources once plants are established. The main principle of waterwise landscaping is to select "the right plant for the right place", which means choosing plants that are well adapted to the specific conditions where they are to be planted (e.g., soil type, soil moisture, amount of sunlight, and temperature). Selecting plants in this manner reduces the demand for supplemental resources, such as water, fertilizers, and pesticides (Figure 5). Waterwise recommends using lawn sparingly and only in high traffic areas, such as play areas, because lawns have high water requirements. Both waterwise and firewise recommend grouping plants in islands. Waterwise makes this recommendation so that plants with similar water requirements are placed together, while firewise recommends this so as to create fuel breaks (islands should be separated by at least 10 feet with materials that won't burn such as well maintained lawn or rock). Waterwise landscapes require less water to stay healthy. This becomes especially important during drought periods when restrictions on watering may be implemented and the risk of wildfire is greater.

Energy conservation

Strategic placement of trees, shrubs, and other landscape plants around a house can reduce the energy required to keep homes and surrounding areas comfortable during the summer and winter months. Reductions in cooling costs are achieved by strategically planting shrubs and trees to provide shade and funnel wind towards the house during the summer. Heating costs can be reduced during the winter by arranging rows of shrubs or trees at set distances from a house to block the winter winds (windbreaks) and/or by arranging shrub rows around the foundation of the house to create an insulating dead air space. Foundation plantings, however, can represent a fire hazard if the plants are highly flammable. Likewise, trees near the house can create a fire hazard due to overhanging branches. A common energy conservation recommendation is to plant vines near a home to shade walls, another practice not recommended in firewise guidelines.

Figure 5. In the front of this house, the homeowners installed mulch and planted a variety of native and ornamental shrubs that require little or no irrigation once established (for water conservation). The landscape also has vertical and horizontal separation between plants, which provides protection from wildfire. Credits: Larry Korhnak (c) UF/IFAS 2006.

Multiple landscaping goals

There are several landscaping programs that combine multiple landscaping goals, such as the Florida Yards and Neighborhoods (FYN) program (http://edis.ifas.ufl.edu/EP079). This program emphasizes elements of the aforementioned landscaping goals, such as water efficiency, "right plant, right place", mulching, and attracting wildlife. The FYN program also emphasizes recycling, reducing stormwater runoff, and protecting waterfront. Sustainable design guidelines, such as Low Impact Design (LID), encourage the use of native plants and minimal irrigation, as well as

minimizing land clearing and other site disturbances during development. LID guidelines are part of the green design movement, which seeks to lessen the impacts of development and to increase water and energy efficiency.

Apparent conflicts

Where firewise guidelines seem to conflict with other landscaping guidelines, slight modifications can be made to overcome these apparent conflicts. This can help create a program that incorporates firewise and other landscaping goals. Table 1 on page 8 provides an overview of how these different landscaping goals (i.e., wildlife habitat creation or enhancement, water conservation, and energy conservation) (in columns) agree or conflict with key firewise principals (in rows). When a firewise landscaping principle is compatible with a goal (i.e., does not conflict), there is a "Y" (yes) in that column. If a firewise landscaping principle is potentially incompatible (i.e., potential for conflict) with a particular goal there is an "N" (no). The apparent conflicts will be discussed in more detail in the following section titled "How to Achieve Multiple Goals".

How To Achieve Multiple Landscaping Goals

In this section, we include strategies for resolving apparent conflicts (indicated by "N") shown in Table 1on page 8 among different landscaping goals so that multiple goals can be achieved simultaneously. The following bulleted list outlines the key conflicts between firewise landscaping and other goals and suggests some solutions to overcome these conflicts. If you are not sure of your wildfire risk, you can determine it by completing a wildfire risk assessment on your property (http://edis.ifas.ufl.edu/FR076 or http://www.interfacesouth.org/fire/WildfireRAGH.pdf) or by contacting your county forester or extension agent for assistance.

- **Avoid flammable plants near your home**

- *Conflict 1*: Firewise generally discourages planting shrubs close to a house. Foundation shrubs are recommended, however, for energy conservation. Energy conservation principles also promote strategic placement of trees near the home for shade and consequently reduced energy costs.

  Solution 1: Foundation shrubs should have at least 2-3 feet between their branches and the house and be trimmed to stay 2 feet below the windows. Select shrub species that have a low flammability (see extension publication "Selecting and maintaining firewise plants" (http://edis.ifas.ufl.edu/FR147) for how to do this). Also select trees of low flammability and trim branches up to 10 feet.

- *Conflict 2*: In firewise landscaping, individual or small groups of trees and shrubs can be maintained in the defensible space (within 30 feet of house), but low-growing groundcovers are recommended as the primary landscape plants. Yards with extensive lawn areas are often cited as good examples of firewise landscaping because well-maintained lawns are relatively low in flammability, and they can function as a barrier to fire spread. However, landscaping principles for wildlife or water conservation recommend limiting lawn areas and they don't specify using plants of low flammability as criteria for selecting plants.

  Solution 2: In high-traffic areas immediately around the house, a well-maintained lawn may be the best choice due to its resilience to foot-traffic and effectiveness as a firebreak. However, lawns can also become flammable when they are drought stressed. Thus, in low-traffic areas of your yard and in the outer edges of your defensible space zone, lawn can be replaced with organic mulches and alternative ground covers that might

require little or no supplemental resources (e.g., water, fertilizer, weed killers) (Figure 6). Plants of low-flammability should be selected that also meet wildlife and water conservation principles. Sidewalk or stone steps also work well. Note: Islands of plants (including ground covers) should be separated by areas that will not burn, even in these outer edges.

- **Maintain vertical separation**
  - *Conflict 3:* Firewise landscaping discourages vertical layering of vegetation while landscaping for wildlife encourages it.

    Solution 3: If you live in an area at high risk of wildfire, you should give priority to firewise landscaping and maintain vertical separation (Figure 5) between plants within your defensible space. However, beyond that defensible space you can leave patches or islands of vertically layered vegetation, as long as these islands are separated horizontally by areas that are cleared of dense vegetation.

- **Clear dead plant material and organic mulches near home**
  - *Conflict 4*: Firewise recommends removing dead plants and brush piles from around the house, while wildlife landscaping encourages leaving such plant materials as habitat for wildlife. Firewise also often discourages the use of organic (or wood-based) mulches close to the house due to their potential fire hazard. The use of mulches in landscaping is recommended for water conservation.

    Solution 4: If you have a large enough lot, create small, isolated brush piles greater than 60 feet from your house and remove all dead plant materials from within your defensible space with the exception of mulches. Organic mulches composed of large chunks, such as pine bark, can be used in landscaping near the home. Pine straw mulch is highly flammable and should be avoided. Maintain an area 2-3 feet outward from side of house as bare ground or covered by rock/gravel, and keep it clean of all mulch and other plant material. Snags are individual, dead trees, and they can be left outside the defensible space, as long as they are not tall enough to fall on your house. Snag retention is most appropriate for larger lots, where more distance can be left between them and the home. All dead branches should be removed from these trees within 10 feet of the ground, as should any branches that could be hazardous to people if they were to fall.

Figure 6. The beach sunflower (*Helianthus debillis*) in this landscaping island is a low-growing groundcover that requires little maintenance once established. They are one example of an aesthetically pleasing alternative to the common lawn that is water efficient and firewise. Credits: Larry Korhnak (c) UF/IFAS 2006.

Summary

Homeowners who are interested in landscaping to conserve energy and water and to enhance wildlife habitat can also make their homes safe from wildfire with proper planning. When firewise landscaping is compared with other landscaping goals, few differences actually exist. In those instances that reveal conflicts, small modifications can often be made to resolve differences.

Currently there are landscaping programs, such as the Florida Yards and Neighborhood program (http://edis.ifas.ufl.edu/EP079) that encourage landscaping for multiple environmental goals (e.g., wildlife habitat enhancement, water and energy

conservation). Firewise principles could be similarly included with other landscaping goals by resolving apparent conflicts, as we have outlined on pages 5-6. Landscaping for multiple goals, including firewise, ensures an environmentally friendly, sustainably designed landscape while reducing the risk that wildfire may damage your home.

Additional Resources

Fire

Firewise Web site http://www.firewise.org. National Wildland-Urban Interface Fire Program.

Landscaping in Florida with Fire in Mind by M. Monroe and A. Long. http://edis.ifas.ufl.edu/FR076

Firewise Retrofit Home on InterfaceSouth http://www.interfacesouth.org/fire/firewise. The Southern Center for Wildland-Urban Interface Research and Information.

Wildlife

National Wildlife Federation Backyard Wildlife Habitat program http://www.nwf.org/backyardwildlifehabitat/index.cfm

Landscaping Backyards for Wildlife: Top Ten Tips for Success by M. Hostetler, G. Klowden, S. Miller, K. Youngentob http://edis.ifas.ufl.edu/UW175

Water conservation

Waterwise landscaping website by St Johns Water Management District, Florida. http://www.sjrwmd.com/programs/outreach/conservation/landscape/

Xeriscaping for Florida Homes by M. Brandies, published by Great Outdoors Publishing Company, Inc., 1999.

Energy conservation

Landscaping for Energy Efficiency by U.S. Department of Energy. http://www.eere.energy.gov/consumer/your_home/landscaping/index.cfm/mytopic=11910

Conserving Energy with Plants by M.A. Powell. http://www.ces.ncsu.edu/depts/hort/hil/hil-631.html

Multiple landscaping goals

A Guide to Environmentally Friendly Landscaping: Florida Yards & Neighborhood Handbook. http://edis.ifas.ufl.edu/EP079

Florida Guide to Environmental Landscaping by E. Gilman, S. Brown http://edis.ifas.ufl.edu/EL001

Enviroscaping by J. Bradshaw, L. Tozer http://edis.ifas.ufl.edu/EH215

Sustainable Design Guidelines

LEED: Leadership in Energy and Environmental Design. http://www.usgbc.org/DisplayPage.aspx?CategoryID

=19&

The Practice of Low Impact Development. Published by U.S. Department of Housing and Urban Development, 2003. http://www.huduser.org/publications/destech/lowimpactdevl.html

Table 1. Compatibility of several landscaping goals with firewise landscaping principles. A "Y" indicates compatibility, while an "N" indicates potential incompatibility

	Landscaping Goals		
Firewise Landscaping Principle	**Wildlife**	**Water**	**Energy**
Avoid flammable plants near your home	**N**	**N**	**N**
Group plants to create areas that won't burn	**Y**	**Y**	**Y**
Maintain vertical separation	**N**	**Y**	**Y**
Less maintenance required at greater distances from home	**Y**	**Y**	**Y**
Clear dead plant material and organic mulches near home	**N**	**N**	**Y**
Maintain healthy plants	**Y**	**Y**	**Y**