



EXTREME Microclimates —

Do you know a gardener who always has the earliest flowers and vegetables? How does he or she seem to keep harvesting plants long after the rest of us have given up vegetable gardens and landscapes to the chilly weather of fall?

Many of these gardeners exploit microclimates. Microclimates occur when the climate (temperature, precipitation, etc.) of an area is significantly different from the climate of a larger, surrounding area. There can be microclimates on a property that are significantly colder, warmer, wetter, or dryer than the rest of the property. These microclimates can occur naturally or be created by a landowner.

Become a microclimate detective to uncover features to use to your advantage.

The first step in extending the growing season is to take stock of a property. During different parts of each season (spring through winter), take time to note where and how long the sun shines in different spots on the



property, the direction of the wind, and naturally drier or wetter locations. Also, record what plants already seem to grow well in each location. All these factors can provide clues on locating plants.

Sun exposure

- Consider taking advantage of the southern exposure of buildings, rocks, and other large objects to place plants that grow best in warmer, protected locations (warm-weather flowers such as sunflowers, *Agastache* [hyssop], and ice plant and vegetable crops such as corn, melons, and tomatoes).



Often in Wyoming, with its plentiful, strong sunlight, the south side of structures receives significantly more sunshine than other sides, especially during the early spring, late fall, and winter when the sun is lower

on the horizon. This situation creates microclimates where vegetation can be planted that would not survive or grow well in other locations; however, soil on the southern exposure can be more prone to repeated freezing and thawing, which can heave plants and damage their roots. Mulching can minimize this.

For warmer parts of the state, an eastern exposure can be the best location for plants that need cooler, wetter, less windy conditions.

- Materials such as brick and stone, placed in a southern or western exposure, can accumulate heat from the sun during the day that is released at night, raising the temperature of the air and soil near them. Mini-versions of such “heat sinks” can be created by locating dark containers filled with water near plants. The sun will warm the water during the day, and the heat will be released during the cooler hours. This is the theory behind Wall O’ Water® and similar plant protectors. Consider using closed containers so they don’t provide breeding sites for mosquitoes. These types of containers can be found at local nursery and hardware stores or via Internet gardening sites.

GARDENING

making them work for you

Air movement

- Think about the direction and strength of the wind in various locations on a property. Consider creating a windbreak to protect plants from the wind's drying and cooling effects. Smaller plants can be located just downwind to larger ones for protection; however, keep in mind the shade cast by larger plants and the smaller plants' sun needs.
- Windbreaks, in addition to protecting plants from the harsher climatic effects, can be used to capture snow (creating drifts) that helps protect hibernating plants near them from extreme temperatures. The melting snow in the spring can provide additional water to these plants; however, plants in these locations may emerge more slowly than in warmer, more exposed parts of a property. For more information, see previous *Barnyards & Backyards* articles on windbreaks, Winter 2006 and Autumn 2005. Copies may be obtained by e-mailing the University of Wyoming College of Agriculture's Resource Center at bixbyd@uwyo.edu or calling the center at (307) 766-2115. Small windbreaks such as wooden shingles can be placed near newly planted seedlings for protection from the

wind and the abrasive soil particles it carries that can injure tender seedlings.

- Consider the slope of the land and the objects on it. Southern sloping hillsides will generally be warmer and drier, especially if protected from the wind. Cold air, since it sinks, can flow across land in a manner similar to water. This can create cold pockets if the cold air flows down a hill and pools at the bottom. In addition, large objects, such as buildings, can catch cold air flowing downhill and cause it to collect on the upper slope edge.



Adaptation is the key – Pick the right plant for the right spot

- Most importantly, in all gardening or landscaping projects, choose plant species or varieties best adapted to conditions that naturally occur or that are created. A plant adapted to those conditions



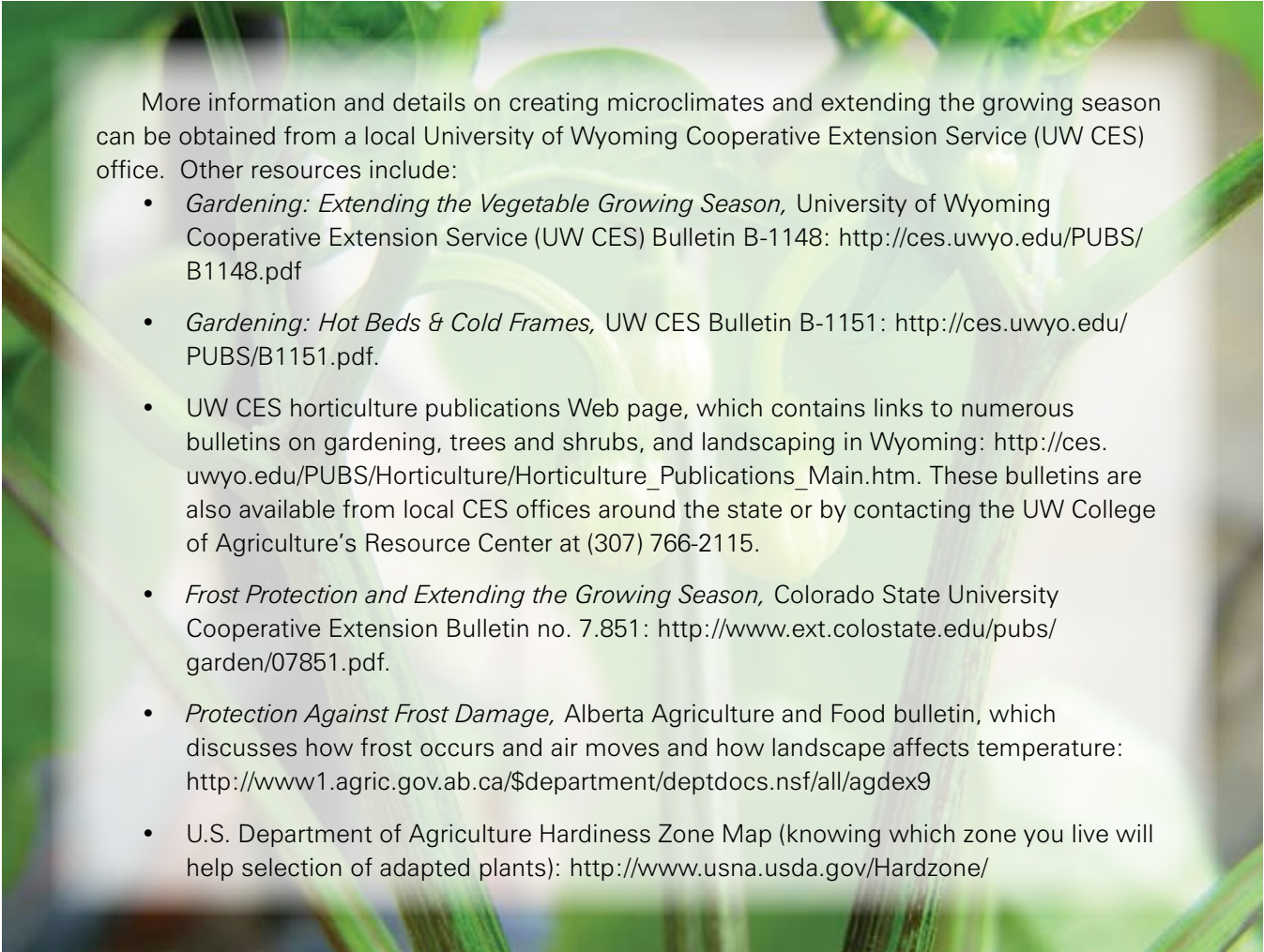
will get a jump on the season and prosper with less care than non-adapted ones. Pay attention to adaptation information for each kind of plant (U.S. Department of Agriculture hardiness zones, amount of water needed, where that plant is native to, etc.). More and more seed companies and nurseries are selling materials better adapted to western conditions than those from the East or Midwest.

Along with naturally occurring features on a property, various techniques and man-made structures can extend the gardening season. Some man-made structures include various types of mini-greenhouses, including cold frames, hot-beds, hot caps, milk jugs, and hoop houses constructed with plastic or clear fiberglass (see sidebar below to find

more information on these structures). Raised beds usually warm more quickly surrounding areas and are often used by gardeners to get a jump on the season and to provide easier access to plants (less stooping and kneeling). Gardeners tend to be creative, thrifty souls and often utilize recycled materials to construct these climate-modifying structures.

Take a look at naturally occurring microclimates on your property, and then consider what materials and techniques to use to create new ones or modify existing ones. Visit neighbors whose places seem to green up first in spring, and ask them what they do to take advantage of the best aspects of our climate.

A little thought and planning can help you enjoy an extended growing season and help you keep cabin fever at bay!



More information and details on creating microclimates and extending the growing season can be obtained from a local University of Wyoming Cooperative Extension Service (UW CES) office. Other resources include:

- *Gardening: Extending the Vegetable Growing Season*, University of Wyoming Cooperative Extension Service (UW CES) Bulletin B-1148: <http://ces.uwyo.edu/PUBS/B1148.pdf>
- *Gardening: Hot Beds & Cold Frames*, UW CES Bulletin B-1151: <http://ces.uwyo.edu/PUBS/B1151.pdf>.
- UW CES horticulture publications Web page, which contains links to numerous bulletins on gardening, trees and shrubs, and landscaping in Wyoming: http://ces.uwyo.edu/PUBS/Horticulture/Horticulture_Publications_Main.htm. These bulletins are also available from local CES offices around the state or by contacting the UW College of Agriculture's Resource Center at (307) 766-2115.
- *Frost Protection and Extending the Growing Season*, Colorado State University Cooperative Extension Bulletin no. 7.851: <http://www.ext.colostate.edu/pubs/garden/07851.pdf>.
- *Protection Against Frost Damage*, Alberta Agriculture and Food bulletin, which discusses how frost occurs and air moves and how landscape affects temperature: [http://www1.agric.gov.ab.ca/\\$department/deptdocs.nsf/all/agdex9](http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/agdex9)
- U.S. Department of Agriculture Hardiness Zone Map (knowing which zone you live will help selection of adapted plants): <http://www.usna.usda.gov/Hardzone/>

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