

# Climatic Transition

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## TRANSITIONAL ZONE 7 IS A GARDENER'S ENIGMA

Stretched along Alaska's Aleutian coast to Washington's Puget Sound, USDA Zone 7 becomes a zone of climatic transition between coastal lowlands and the towering Cascades. In winter, warm, moist Pacific air collides with frigid, arctic air in a turbulent marriage of maritime influence and altitude extremes. Spring and summer may be slow to come, early to leave. Air temperature varies widely. Rain may be heavy in some places, absent in others. Gardeners experience quite different climate pockets a short distance apart.



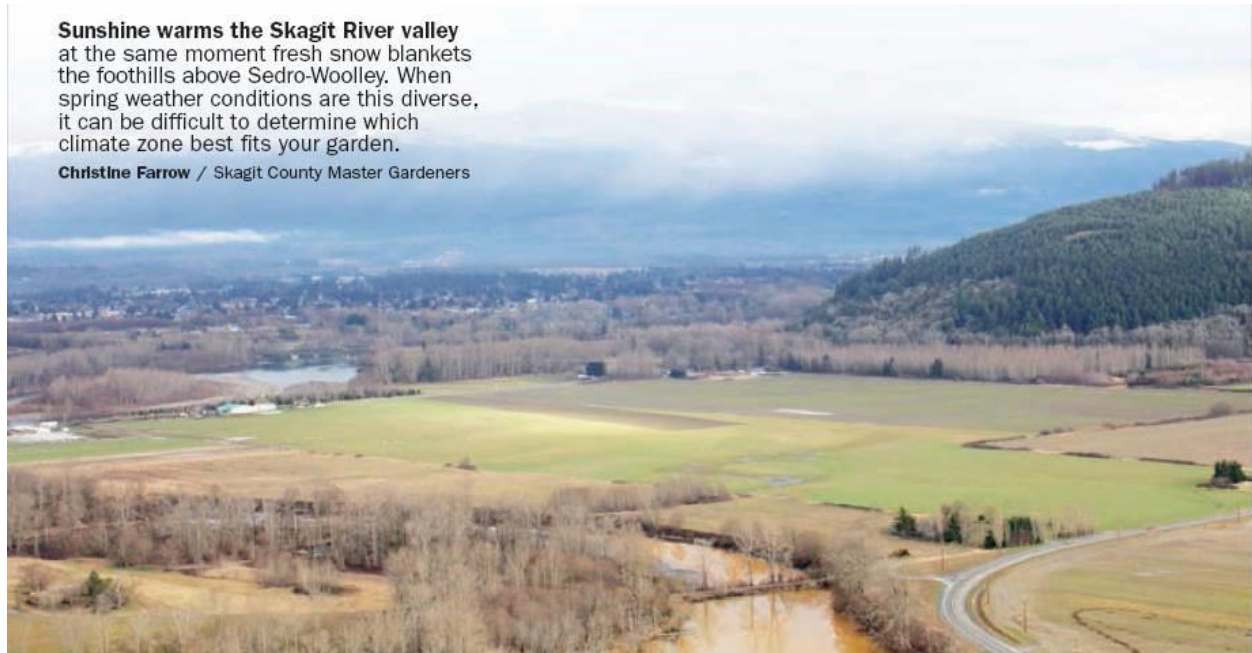
USDA Plant Hardiness Guide –  
[planthardiness.ars.usda.gov/PHZMWeb/Default.aspx](http://planthardiness.ars.usda.gov/PHZMWeb/Default.aspx)  
Click Interactive Map, enter your zip code, and the site will generate a map of your area with its associated hardiness zones. Click on your approximate location, and the site will furnish you with specific hardiness information.

Whether you live on a foothill or among mountains in a lowland, understanding your growing conditions becomes a true journey of discovery. In intermountain lowlands, a garden is influenced by its distance from the Puget Sound and its closeness to nearby mountains. Should you live on a foothill, its contour, elevation, and orientation to the sun also influence climate. Climate, in turn, determines plant hardiness limits, soil temperature, precipitation, and heat accumulation during the growing season.

## How Cold is Cold?

USDA's Hardiness Zone ratings represent years of careful plant trials over a wide area, so they are our best litmus of plant success. You can explore your local zone by visiting USDA's Plant Hardiness Zone Interactive Map at [www.planthardiness.ars.usda.gov](http://www.planthardiness.ars.usda.gov) and using the zoom-in feature. Notice there are split designations "a" and "b", reflecting changing elevation.

Unfortunately, other factors—like soil type and pH—also determine whether a plant will thrive. Moreover, zone maps don't actually provide much local detail, particularly in mountainous areas where several zone changes occur within a few miles. Nor will they show places where a “cold sink” might occur, usually valleys where heavier, cold air slides down mountain slopes and settles, producing atypical-for-zone freezes. By keeping an eye on the weather, recording frost and minimum night temperatures, you will know better what to plant, when to plant and when to protect plants, especially in spring. If you are new to your garden, err on the side of caution. Choose plants whose tolerance for cold exceeds what you initially expect.



### **Slope and Spring Warming**

Your slope and inclination toward the sun affects how soon the soil warms up and therefore when to plant. When the sun is high, level land absorbs more sun energy, but in spring and fall, south-facing slopes absorb sunlight more directly. North slopes stay cooler all year long, as do east slopes, especially in areas of morning fog.

In spring, as winter moisture evaporates, the soil warms. Excessive moisture in your soil delays warming and therefore delays when to plant. Slope causes moisture to drain away, so soil warms early. Yet too steep a slope results in problematic dryness, especially in late summer.

Take a handful of soil in spring once the air begins to warm and squeeze it. If water drips from it, try again after a few rain-free days. If too much moisture persists, your soil may be poorly drained. Alternatively, if the soil ball crumbles, then your soil is too porous and dry. In either case, adding organic matter will improve conditions. In extreme circumstances, steps to improve or retard drainage may be called for.

## Where It Rains, It Pours

Land contours in zone 7 can generate peculiar rainfall patterns. As moist air is blown uphill, it cools and drops moisture. Tumbling downhill, it warms and dries. On average, annual rainfall becomes heavier as you travel east into the Cascades, but your local microclimate may vary.

Obtain a rain gauge to measure precipitation relative to reported rainfall. Watch the direction of incoming storms to discover if you live in a local “rain shadow,” or conversely, an area of heavy rainfall. Take note of areas where water pools and where it drains away quickly. When you choose plants, be alert to their water and drainage requirements.



**Two Simple thermometers** that record daily minimum and maximum temperature changes can help you begin to understand the microclimate(s) of your home garden. *Photos by Christine Farrow / WSU Skagit County Master Gardeners.*

## Heat Accumulation: the Plant Growing Season

The lower Skagit Valley area has a long growing season of approximately 230 growing days, while the upper valley has approximately 200 days. Elevation, especially beyond the marine influence, may shorten it. While our growing season is long, it is comparatively cool. This becomes a problem for plants that need a fair amount of accumulated heat, without which they may fail to grow, flower, set fruit or ripen.

- Seed companies test seed to determine how many “days to maturity” a plant variety requires and note this on seed packages. When you buy seed, notice where the seed company is located. If it’s in a different USDA zone or otherwise where growing conditions are different, you may not achieve their results. When possible, purchase from a seed company nearby.

- Select plant varieties that mature early. In mountain communities, sow seed and plant out two to three weeks *later* in the spring; in fall, two to three weeks *earlier* in summer.
- If you start seed directly in the ground, air and soil temperature measuring can be very useful. Tracking this information in a garden log will improve your results.
- Consider transplanting mature seedlings when growing certain warm season vegetables and fruits, and using season-extending techniques like row cover, cold frame, or greenhouse to ensure ripening.

What you do as a gardener is to help life along where it responds to land, sea and sky, sometimes dramatically in Zone 7. You must view the challenges as a puzzle to solve, a give and take, a process, and sometimes a mystery. What you're apt to find is quite a discovery - There is joy in gardening.

## **RESOURCES:**

### **Climate**

- *Hopkins Bioclimatic Law, Bioclimatics: A Science of Life and Climate Relations.* Andrew Delmar Hopkins, U.S. Dept. of Agriculture, 1938. (Available free at Google Books.)
- Climatic basics for botanists:  
[http://www.botany.wisc.edu/courses/botany\\_422/Lecture/pdf/Climate1.pdf](http://www.botany.wisc.edu/courses/botany_422/Lecture/pdf/Climate1.pdf)
- *The Weather of the Pacific Northwest*, Cliff Mass, U. of Washington Press, p 65.
- *The Maritime Northwest Garden Guide.* C. Elliot and R. Peterson, principal authors, Seattle Tilth Publisher, pp 6.

### **Growing Strategies**

- *Using Heat Units to Schedule Vegetable Plantings, Predict Harvest Dates and Manage Crops.* Nick Andrews, Small Farms Program, Oregon State University & Len Coop, Integrated Plant Protection Center, Oregon State University Press, Vol. VI No. 4, 2011.  
<http://smallfarms.oregonstate.edu/sfn/fl11degreedays>
- *Getting Results from a Short Season.* Bill Kohlhaase, Planet Natural.  
<http://www.planetnatural.com/high-altitude-gardening/>
- *Garden Flowers for Mountain Communities.* James Feucht, CSU Cooperative Extension, SIA brochure no. 7.406, 1988
- *Colorado Mountain Gardening Basics.* L. Potts and I. Shonle, CSU Cooperative Extension, SIA brochure no. 7.244, 2008. Or see  
<http://www.ext.colostate.edu/pubs/garden/07244.html>.
- *Garden Strategies for Short-Season, High-Altitude Zones.* Stephen L. Love, Kathy Noble, and Stuart Parkinson, University of Idaho Extension Bulletin 859, University of Idaho Press, 2009. <http://www.cals.uidaho.edu/edComm/pdf/BUL/BUL0859.pdf>
- *Growing Tomatoes in Cool Short-Season Locations.* Michael Bauer, Danny L. Barney, and Jo Ann Robbins, University of Idaho Extension Bulletin 864, University of Idaho Press, 2009.  
<http://www.cals.uidaho.edu/edComm/pdf/BUL/BUL0864.pdf>

## **Plant Hardiness**

- USDA Plant Hardiness Guide:  
<http://planthardiness.ars.usda.gov/PHZMWeb/Default.aspx>  
Click Interactive Map, enter your zip code, and the site will generate a map of your area with its associated hardiness zones. Click on your approximate location, and the site will furnish you with specific hardiness information.
- *Zoning in on Hardiness*. The Proven Winners® official Website is where plant breeders offer additional suggestions on determining whether plants will behave as perennials in their zone designation.  
<http://www.provenwinners.com/learn/zoning-hardiness>

## **Other Useful Websites**

- Purdue University heat unit calculator:  
<http://www.hort.purdue.edu/rhodcv/hort410/csheatuj.htm>
- Puget Sound soils upland in Skagit County, visit the following slideshow, and search “Skagit”.  
[http://puyallup.wsu.edu/soilmgmt/Slideshows/SS\\_Soils\\_PugetSound\\_Jan11.pdf](http://puyallup.wsu.edu/soilmgmt/Slideshows/SS_Soils_PugetSound_Jan11.pdf)
- Community Collaborative Rain, Hail, and Snow Network. Homepage:  
<http://www.cocorahs.org/>
- Climate Charts. <http://www.climate-charts.com/States/Washington.html>