

Understanding Zone Maps

Open any garden book or catalog and you are bound to find a reference to zones or a picture of a zone map. Most gardeners could readily tell you the number of the zone they garden in, but truly knowing your zone is more involved than its numerical designation.

Zone maps date back to the early 19th century. In their crudest form areas of equal temperature delineated the zones. In 1927 horticulturist Alfred Rehder created an isothermal map consisting of a system of eight zones with average winter minimum temperature differences of 5 degrees Fahrenheit. Isotherms are lines of constant temperature on a map or chart, in this case average minimum winter temperature.

In the 1930s a zone map was published that divided areas into regions that shared similar vegetation. By virtue of looking at similar vegetation, this map tends to take rainfall, humidity, elevation, and soils into account. It is referred to as an ecoregion map.

In 1938 the Arnold arboretum map was created. It expanded on the original Rehder map of delineated temperature regions. This map differs from Rehder's in that its temperature bands (based on average winter minimum) are 5, 10, and 15 degrees apart depending on latitude.

In 1990 the United States Department of Agriculture (USDA) developed the most widely published map, using the concept of the original zone map of the 1930s. It divides the United States into 20 separate zones numbered 1 to 11 (1 being the coldest and 11 the warmest). Zones 2 through 10 are divided into "a" and "b" regions. Each zone, or isotherm, is 5 degrees Fahrenheit different in average minimum winter temperature from its adjacent zone.

The USDA map works well for the Eastern part of the United States where elevation changes are less extreme than the West. The result is that zones tend to parallel each other and are about 120 miles wide. This map does not take snowfall, freeze thaw cycles, and soil drainage into account. As a result, west of the 105th meridian (which passes through Denver) the map is not fully satisfactory.

There are many factors besides average winter temperature that determine plant survivability. The criteria which should define zones are: winter cold; summer heat; amount, duration, and seasonality of rainfall; humidity; wind seasonality; and sunlight hours. Additionally in the far west, potential winter deviation from average is greater than in the southeast. Beyond that, rainfall seasonality may be an even more important factor in western plant survivability than the potential for low temperature.

Most western US gardeners regard the Sunset National Garden Book map as the standard for judging zones in the United States. This map creates 45 non-isothermal zones, 24 of which are in the high plains, intermountain, and pacific west and 21 of which are in the east. In going beyond the isothermal concept it recognizes the differences in eastern and western climate and that more than winter and summer temperature determine a

plant's suitability in any area. Most west coast gardeners use the Sunset Western Garden Book as the standard guideline for plant suitability.

No single map appears to be able to fully define plant-climate suitability. While each has shortcomings, each has information that we can learn from. Students of climate note that the far western US is famous for micro-climates. In our area, Sauvie Island is considerably different from the top of the West Hills; and Vancouver is very different from Yacolt. Consider your exact location, and when buying a plant, it's tolerance to cold, heat, and summer drought. Perhaps the ecoregion method is the simplest for most of us – if it grows in your neighbor's yard it will probably grow in yours.

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References updated 5/17/11

References

[Sunset climate zones: Western Oregon](#), Sunset Publishing Corporation at <http://www.sunset.com/>
[USDA Plant Hardiness Zone Map](#), The United States National Arboretum