

Climate Zone Maps For Desert Trees

Landscape professionals have long relied on the United States Department of Agriculture's (USDA) Plant Hardiness Zone Map to determine the adaptability of a given landscape plant to a particular geographical area. This system divided the country into distinct zones and assigned each a unique number. With this system individual plants could be described as horticulturally "adapted" to particular zones and not recommended for others. The USDA Zone System was based almost exclusively on the cold hardiness of a plant and the historical temperature data for a given region.

In reality the zone system was essentially a cold hardiness map. While widely used for many years this system has severe limitations in most areas of the desert southwest where frost damage is only one of a complex of environmental factors that can impact plant growth and survival. In the recently revised 5th Edition of the Sunset Western Garden Book the editors have divided the western US into 24 Climate Zones and identified plants that will thrive in each. Climate Zones consider a location's distance from the equator (latitude), elevation, marine influences (nearness to large bodies of water), influence of air flow, hills and mountains and local terrain. These factors, taken together, attempt to characterize the environmental factors that will influence plant growth in each of these zones. It also further divides the USDA Zone to avoid situations where, as in the USDA system, parts of the Olympic Rain Forest shared a Zone with parts of the Sonoran Desert.

The American Horticultural Society (AHS) has developed a system that emphasizes the intensity and duration of hot weather in its classification of planting zones. This classification system is of particular value to horticulture professionals working in warm regions, as it takes into consideration high temperature as a primary factor. The map defines a "heat day" as a day when the temperature exceeds 86 degrees F (30 degrees C) and identifies 12 Zones based on the average number of heat days a region experiences annually. Zone 1 is characterized as having no heat days while Zone 12 has 210 heat days a year.

The map Zones assume that plants within the identified region receive adequate water and that other limiting environmental factors are minimized. H. Marc Cathey, President Emeritus of the AHS, lists several factors that would skew this Heat Zone Rating. These would include: limited oxygen caused by drought stress or excessive irrigation; light, as either limited light that inhibits photosynthesis or intense light that will heat plant tissues; day length-long sunlight exposure coupled with extreme high temperatures; air movement, where high temperatures in combination with high winds accelerate the rate of plant tissue drying as compared to high temperatures without winds; surrounding structures, recognizing that heat reflected from nearby buildings and walls impacts landscape plants; soil pH (plants extract water and nutrients more easily and effectively from soils with pH's close to 7.0); and soil nutrient levels. Ideally a system will emerge that will take into account all the critical factors affecting plant health and vigor. Until then it is likely that the horticultural literature will use any one of these systems or a combination of all three.

Landscape professional would be well served to understand all three of these classification systems and use them, in conjunction with their personal experience, consultation with local experts and knowledge of their area. The Western Garden Book is available in the gardening section of nearly all bookstores and the AHS Plant Heat-Zone Map is available for \$14.95 by calling (800) 777-7931. In January 1998, Time Life, Inc will publish a book on heat-zone gardening by H. Marc Cathey.