

Understanding Plant Hardiness Zones

With so many plants to choose from, how can gardeners know what plants will thrive in their gardens? Have you ever seen a photo of a plant that you simply can't resist — but you're wondering if it will grow where you live? To help gardeners choose plants, horticulture experts have developed various systems to match plants to the regions in which they'll thrive.



The most common system is the USDA Plant Hardiness Zone Map. When a description says a plant is "hardy to Zone 5," this is the map it's referring to. You'll see hardiness zones on seed packets, nursery tags, websites, plant catalogs, and reference books. Developed by the United States Department of Agriculture (USDA), this zone map divides the country into regions based on a single statistic: the average annual extreme minimum winter temperature.

Annual, Biennial, and Perennial, Defined

To understand the relevance of the hardiness zone map, it's important to know a plant's life cycle. Plants can be classified based on the length of their life cycle.

Annual plants live for only one growing season, during which they grow, flower, produce seeds, and then die. Familiar annual plants include sunflowers, zinnias, and zucchinis. Because annual plants die back anyway, minimum winter temperature isn't a factor and the hardiness map isn't relevant for these plants. (More important is your region's average last spring frost date and average first fall frost date.)

The USDA hardiness map is useful for choosing plants that overwinter; that is, plants that grow for more than one growing season.

Biennial plants complete their life cycles over two years. The first year, they produce leafy growth. They overwinter, then during their second growing season, flower, produce seeds, and die. Examples include beets, cabbage, carrots, and some types of foxgloves.

The term **perennial** is reserved for plants that live for more than two years. Perennials are often broken down into two categories:

- **Herbaceous perennials.** These are non-woody plants that die back to the ground each fall. The roots, however, survive the winter and the plants re-sprout in the spring. Examples include hosta, daylily, purple coneflower, and asparagus.
- **Woody perennials.** These include trees, shrubs, and vines whose above-ground parts persist over the winter and resume growth in the spring. These include oak, boxwood, blueberry, and grape.

Understanding Hardiness Zones

On the USDA's [Plant Hardiness Zone Map](#), colorful bands delineate the zones in 5-degree Fahrenheit increments. In the coldest region, zone 1a (found only in Alaska), the average

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annual extreme minimum winter temperature is -60° to -55° F. In contrast, in zone 13b (the warmest, found only in Hawai'i and Puerto Rico), temperatures drop to an average low of 65° to 70° F.

In the eastern half of the continental U.S., the zones are arranged in relatively uniform bands that show a progression of zones from low in the north to high in the south. However, in the mountainous West, the zones become less uniform due to extreme differences in minimum winter temperatures across elevations.

If you live in zone 5, your average minimum winter temperature is minus 10 to minus 20° F. You can be relatively confident that a plant rated hardy to zones 1 through 5 will tolerate your winter temperatures. If you choose plants rated hardy to zones 6 and above, you're taking a chance that they'll succumb to the cold. In some cases, you can grow plants that are marginally hardy by taking precautions, such as providing winter mulch to insulate them or planting them in a warm microclimate in your yard.

Plant Hardiness Ranges

Most plant descriptions give a hardiness range that includes an upper limit. That's because plants also differ in their ability to tolerate summer heat. For example, the sugar maple is a cold-tolerant tree rated hardy in zones 3 to 8. In zones 9 and above, the winters are so mild that the tree won't receive the chilling it requires to thrive. In contrast, the Southern magnolia is rated hardy in zones 6 to 10; it tolerates cool (but not frigid) winters and thrives in hot-summer climates.

Limitations of the USDA Plant Hardiness Zone Map

Though the USDA map is helpful for determining a plant's winter hardiness, it has limitations because cold hardiness is just one of many factors that influence a plant's ability to thrive. Annual rainfall, seasonal rainfall patterns, alternating freeze/thaw cycles, snowfall, intensity of sunlight, humidity, soil type, and wind are some of these factors.

To illustrate the limitations of the zone map, consider Portland, Oregon, and Tucson, Arizona. These cities are both in USDA Zone 8b, with an average minimum winter temperature of 15° F above zero. However, if you've ever visited these cities, you know that they have very different climates! The Pacific Ocean influences Portland's weather, with mild winters, cool summers, and plenty of moisture. Plants like ferns, primroses, and rhododendrons thrive there. Tucson's intense sun and dry heat, on the other hand, favor desert plants, like aloe, agave, and palo verde.

Another example of the limitations of the zone map is the Himalayan blue poppy (*Meconopsis baileyi*). True to its name, the plant is native to the mountains of China and Tibet, where it's found in moist alpine meadows at altitudes of about 10,000 to 13,000 feet. Hardiness ratings vary, but it's often listed as hardy only in zones 7 and 8. Yet the plant thrives in the famous Blue Poppy Gardens at Les Jardins de Métis (aka Reford Gardens) in Quebec, in a climate far colder than its given hardiness range. That's because the region receives reliable, abundant snowfall that insulates the ground from the area's frigid air temperatures.

Alternative Maps

Consulting the USDA Hardiness Zone Map is just one way to determine whether a plant will thrive in your region. For example, Sunset Publishing developed its own series of maps that divide

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the U.S. and southern Canada into 45 climate zones, based on factors such as rainfall, summer and winter temperatures, length of growing season, humidity, and elevation. The [Sunset Climate Zone Maps](#) are especially useful to gardeners west of the Mississippi, where climate varies greatly across mountain ranges, deserts, and coastal regions.

In places with hot summers, heat tolerance is just as important, if not more so, when choosing plants. The American Horticultural Society's [Heat Zone Map](#) is based on the number of "heat days" in a given area. A heat day is defined as a day in which the temperature climbs to over 86 degrees F. At this temperature, many plants begin to experience physiological damage and start to shut down their functioning. Heat Zones range from 1 (no heat days) to 12 (210 or more heat days). Unfortunately, it can be challenging to find heat zone ratings for most plants.

Other Sources of Information

In addition to consulting zone maps, consider other reliable local sources. Garden centers, professional gardeners and horticulturists, native plant societies, public gardens, regional plant catalogs, and your cooperative extension office are all helpful resources. You can also research the native habitats of your "wish list" plants to see if they match the conditions in your garden. (A perennial that is adapted to sunny desert conditions will have a tough time in a cloudy, wet climate, even if it's within the hardiness zone rating.) If you're willing to take extra steps to protect marginally hardy plants, by all means give them a try. But be realistic and focus on plants that are likely to thrive without extreme measures.

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