



Hardiness and Microclimates

WHY IS THIS IMPORTANT?

Plants are genetically capable of withstanding cold up to a certain point. Built into their genes is information on whether the plant cells can tolerate the colder temperatures. If temperatures drop below the tolerance level for a particular plant, the cold or ice crystals that form actually rupture cells in leaves, stems or roots.

Sometimes cold damage is temporary, due to unseasonable cold weather, but the plant recovers. The term hardiness in gardening means tolerance to cold, not toughness or ability to endure.

Knowing your hardiness zone helps in choosing plants for your garden and evaluating information from other sources.

ACTIVITY

(1) How cold does it get?

MATERIALS:

USDA HARDINESS ZONE MAP FOR NEW YORK
www.gardening.cornell.edu/weather/zones.html
OR

USDA PLANT HARDINESS ZONE MAP FOR U.S.)
www.usna.usda.gov/Hardzone/ushzmap.html

PENCIL AND PAPER

Access USDA Hardiness Zones information from the websites listed above. If you cannot connect to this internet site, ask your local library to access and print it for you.



For New York residents: Use the enlarged map for easier reading and locate the area you live in. Record the corresponding Zone number. If you seem to be near or on the border of another hardiness zone, record that too.

Click on “key summary” to see the temperature range for each zone number. Make a note of the corresponding range for your garden.

ESTIMATED TIME: 15 MINUTES

Hardiness zones exist for other states as well. Residents of other states may open the USDA Plant Hardiness Zone Map website listed in “For Further Reference.” Click on the map for your area and follow the directions on the website.

The zone designation is a cold limit. In addition to showing how cold a garden could get, zones are used as a descriptor for the plant itself. For instance, if you live in Zone 5 (a or b), plants that are rated as hardy to Zone 2, 3, 4, or 5 will overwinter for you. The a and b designation on plants is now always available. Plants can be listed as hardy in a range of zones. Hardiness zones are general guidelines only. The type of winter, e.g. amount of snow, is also a factor. Cultivars of a particular species can have different hardiness.

(2) Visual Observations

There are always exceptions to the hardiness zone guide numbers, since our properties are full of colder or warmer spots called *microclimates*; to read more about microclimates, visit the website on the topic, listed in “For Further Reading” for this step.

There may be microclimatic factors such as:

- *re-reflected heat load* (a portion of your site with heat pockets due to reflected heat from pavement, automobiles, buildings or other surfaces.) This can cause trees to heat up and lose water from its leaves at a faster than normal rate. These pockets often face south and have a tremendous amount of heat. On sunny days, these areas will be noticeably warmer than nearby spots.
- *Frost pockets* (often found in low areas at the bottom of a slope or bowl, cooler, heavier air can collect in these areas.)
- *Moderation of climate* (fewer extremes of temperature) can occur when a site is located near a large body of water

Vegetable and other annual plants are cold-sensitive at the beginning and end of a growing

season. The first and last frost date are limits for most of them. A reference on last spring frost dates for New York is listed in “For Further References.” Gardeners from other states can get this information from local Cooperative Extension offices.

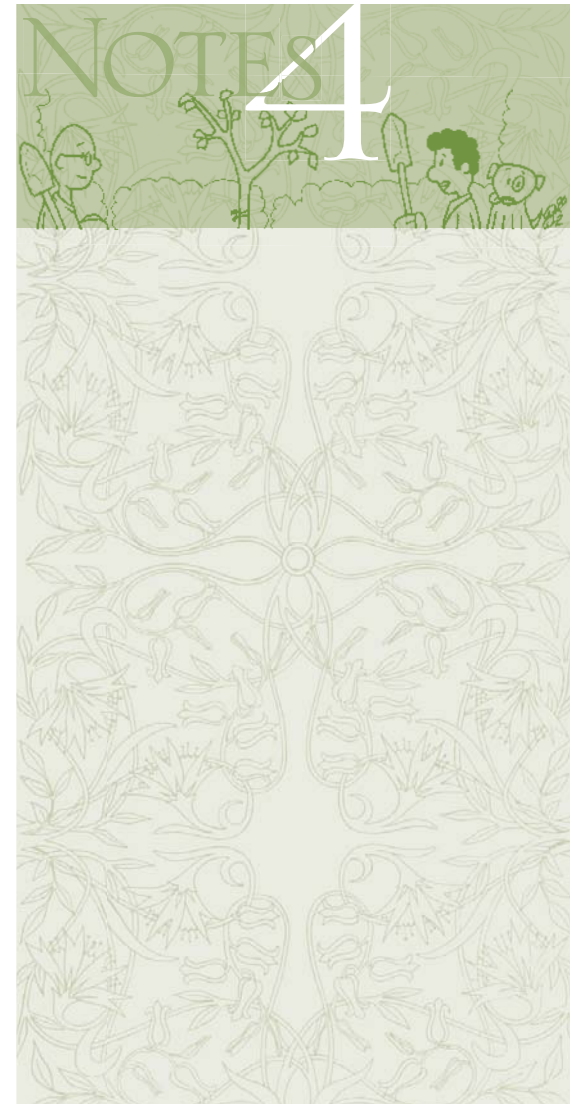
USING WHAT YOU FOUND IN THIS STEP

On the property sketch created in Step 1 (Area), indicate in some noticeable spot:

- what hardiness zone you live in
- any re-reflected heat load spots or frost pockets
- last spring frost date for your area

Use hardiness information later when you are designing your landscape or perennial garden. Choose plants that are expected to fare well over winter in your area. Hardiness won't be very important in choosing annual flowers, vegetables or herbs; they only live one season, dying before winter arrives. For them, last spring frost date is important.

As you read through the catalogues or purchase



plants in garden centers or online, eliminate any plant that has a hardiness zone rating with a number higher than your zone. For instance, if you live in a Zone 5 (a or b), don't choose a plant that is hardy to Zone 6. Some plant selection databases can sort plants by hardiness zone.

Staff and Master Gardeners in county offices of Cooperative Extension in your state can be good advisors on local hardiness observations.

Take into account as you select plants and design gardens and landscapes that any microclimatic pockets or conditions you identified may alter your plans. Spots may be colder or warmer than the hardiness zone suggests.

Choose drought-resistant trees on sites where there are re-reflected heat loads. Indicate re-reflected heat load on your sketch only if it appears to be an ongoing, persistent concern on your property. Re-reflected heat load may be less critical for shrubs or herbaceous plants.

Choose plants from a slightly warmer hardiness zone in frost pockets.

An optional piece of equipment to consider is a maximum-minimum thermometer. It shows you how cold it has gotten since you last set the thermometer.

FOR FURTHER READING

Average Last Spring Frost Date for New York www.gardening.cornell.edu/weather/sprfrost.html

Microclimates, www.gardening.cornell.edu/weather/microcli.html

Understanding Frost, www.gardening.cornell.edu/weather/frost.pdf

USDA Hardiness Zones for New York, www.garden.cornell.edu/weather/zones.html

USDA Plant Hardiness Zone Map (for U.S.), www.usda.gov/Hardzone/ushzmap.html



THE NEW USDA PLANT HARDINESS MAP

