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1.2. *The Meadow is an area in the garden where plant species are intermingled rather than planted in clumps, creating a more naturalistic effect. The white is prairie native Baptisia alba var. macrophylla, the pink heads are the ornamental garlic Allium christophii. (Photo: Piet Oudolf)*



It's Either Freezing or Baking— Gardening in a Midwestern Climate

Gardeners tend to talk about the weather even more than anyone else. In the long run, however, it is climate that dominates everything that happens in the garden—year in and year out, through hot and cold and rain and drought. Understanding climate is crucial for the gardener who wants to make planting that works over the long term.

The American Midwest has a “continental” climate: cold winters and hot summers, with a rapid changeover from one to the other. Visitors joke that there are really only two seasons, with a week for spring and another week for fall. This clear pattern is more moderate along the North American East Coast, with winters less likely to be very cold and summers less hot (although perhaps more humid). In the Southeast, the winters are usually much less severe and shorter, but summers are infamously, unbearably hot and humid. The climate of the Pacific Northwest coast is very different and has more in common with that of northwest Europe, a maritime climate, dominated by the moderating influence of the sea, so winters are cool rather than cold and summers are hot for shorter periods. There is also a distinct Mediterranean element to the climate of the US West Coast—with a tendency for dry summers and wet winters.

In our gardens, we use plants from a wide range of different geographical regions. But our climates do limit what we can use. Gardeners in West Coast maritime climates can get away with using a surprising number of plants from much farther south, because their normal winters are relatively mild. A gardener in a continental climate cannot do this, as long periods of freezing temperatures and bitterly cold winds soon kill off

plants that originate in climates where such weather is not regularly experienced.

The severity of the winter is the main limiting factor for what the gardener can grow in continental climates, although rapid and unpredictable alternation between warmth and cold can do a lot of damage to young growth in the spring too. In particular, winter cold is a major reason for the emphasis on perennials. Trees and shrubs are exposed to frost and wind, whereas perennials, which die down in the winter, are not affected by winter wind and the accompanying windchill factor. The fact that the living tissues of perennials are protected by being either at or just below ground level means that they are protected from the worst of the winter weather; snow too acts as a very good insulator. If you are a plant, being a perennial is a pretty sound strategy in a continental climate.

It should come as no surprise that the vast majority of perennials in the garden trade originate in continental climates. Of these, the overwhelming majority are from North America, mainland Europe, or central or eastern Asia. Bulbs are perennials too, but in a more compact form, and they too avoid the worst of winter by retreating underground; many also avoid the worst of the summer drought by going dormant by midsummer. Although the ancestors of garden bulbs are found across the northern temperate zone, the real center of diversity is central Asia, from Kazakhstan down to the mountains of Iran—an area of very marked continental climate and severe summer drought.

During the winter months, the gardener who works with perennials can relax. Everything just shuts down; they do not have to worry about winter gales or ice storms or deep snow—their plants are safely tucked out of harm's way. If, that is, they have paid attention to selecting plants that will survive in their hardiness zone. There is another advantage to gardening in a continental climate: because it is too cold for growth, there is no winter weed growth either.

Hardiness zones, developed by the US Department of Agriculture, are a very good guide to what is possible to grow in the Midwest and the eastern part of North America, but arguably less useful west of the Rockies. Although they have been used to describe minimum and maximum temperatures for plant survival and growth, it is really only the minimum that has been extensively researched and that is useful for gardeners. It



2.1. The Salvia River is the high point of the Lurie Garden year and shows off the range of tones of blue, violet, and purple that are on offer from the versatile meadow salvias. These perennials are derived from a number of European species (Salvia nemorosa, S. sylvestris, and others) found in dry meadow habitats in central and eastern Europe, an area that has a continental climate approximately similar to that of the Midwest. Varieties of Salvia from left to right are 'May Night', 'Blue Hill', 'Wesuwe', and 'Rügen'; the mix then repeats. (Photo: Robin Carlson)

is possible to use the Internet to enter a postal zip code and find out the zone for your area. Microclimate may affect the zone—being in a frost hollow or having a northerly aspect might tip a garden over into a colder zone, or having a southerly aspect or being next to a large lake might tip into it a warmer one.

The Lurie Garden itself is a good example of a favorable microclimate—being closer to the lake it is warmer than areas farther away, and the surrounding city reduces wind speeds and slightly raises the local temperature.

There is a strong argument that perennials should clearly be the dominant plants in gardens in continental climates, especially for those with



*3.1. The mysterious dusky gray purple of leadplant, *Amorpha canescens*, is not immediately outstanding—it tends to look best in combination with other colors, particularly blues and purples. It is a drought-tolerant native of the Midwest and a good example of the kind of less conventionally attractive plant that we need to start using to help improve the sustainability of our gardens. (Photo: Noel Kingsbury)*

tumn leaves, or shredded branches from tree pruning. Dug into the soil, or applied to the surface as a mulch, such material can do much to improve difficult soils, in particular to improve the water-holding qualities of dry soils.

Most soils fit onto the heavy-light gradient, but not all. Peaty soils are a special case and related to them, the very humus-rich soils that develop in mature forest. If the trees are felled and the soil exposed to the sun, then it will tend to dry out and break down; but if houses are built in an area of woodland, then gardeners may find themselves with just such a soil. Such soils should be cherished as they support some of the most distinc-

Choosing Perennials for the Garden

SUN, SOIL, ASPECT—THE GARDEN ENVIRONMENT

Plants often succeed best where they are growing in conditions that approximate their natural environment. So, before getting too carried away buying plants at the garden center, it is vital to get a sense of what kind of habitat the garden offers to plants. Light (sun or shade), soil chemistry (fertility, acidity/alkalinity), and moisture needs are the three key factors that control how well plants will grow, but different plants need or cope with different levels of these factors—so it is these that are referred to in most garden plant reference books, and often too on the labels and other information material at garden centers and nurseries.

Light

Full sun is a kind of “default position” for garden plants—most of the species we want to grow for decorative effect grow best in good all-round light. Many will also flourish in situations where there is direct sunlight for three-quarters of the day. Given that the “natural” vegetation of much of the Midwest is open prairie, it is to be expected that many native species flourish in full sun; however, savannah would also have been an important presettlement habitat (see page 000)—many natives are also happy in the light shade typical of such sparsely wooded environments.

Light shade refers to situations where there is direct sunlight for half the day or where there is very light or dappled shade caused by trees with a thin or high leaf canopy.

Full shade is where there is little or no penetration of direct sunlight. Species from woodland habitat will thrive here—such as those used in the Dark Plate at the Lurie Garden; although, because the trees are still quite young, the Dark Plate is still growing its shade.





4.1. Penstemon digitalis ‘Husker Red’ is usually grown in full sun, but the wild plant can be found in woodland edge habitats in nature, indicating that it will thrive in light shade in the garden too. The Hosta ‘Blue Angel’ in the background will, however, be much happier in full shade—its leaves may scorch in daylong direct sunlight. (Photo: Jennifer Davit)

The presence of shade can be complicated by additional factors. Shade caused by buildings can be accompanied by poor quality soils (caused by building operations or foundations) or a “rain-shadow” effect. The trees that bring shade to the ground at their base can also reduce moisture and nutrient in the soil around them as their roots efficiently extract both. In situations like this, the best way to grow anything more than a few very tough, and often rather dull, species, like Japanese spurge (*Pachysandra terminalis*) or sedges (*Carex* species), is to improve the soil with organic matter that can rot down and produce humus (see page 000). Natural, healthy woodland soils have a top layer rich in organic matter that holds both nutrients and moisture into which shade-tolerant perennials will root.

Latitude makes a big difference to the strength of the sun. The farther

north you garden, the weaker the sun will be, which makes it easier to grow shade-tolerant plants in light shade or even full sun. The farther south, the more that plants from shaded habitats will scorch badly in the sun; in southern regions it may even be possible, perhaps even desirable, to grow certain sun-loving perennials in light shade. In addition, it may be that in the Southeast, high summer temperatures, exacerbated by high humidity, may make it difficult to grow perennials from more northern latitudes or from higher altitudes.

Soil Chemistry

Many gardeners are familiar with the fact that some plants, for example, azaleas, will only grow in acidic soil conditions. Other plants have preferences too, but most of the perennials grown in gardens are not that fussy—more important is the fertility level of the soil, in particular the amount of the three key nutrients for plant growth: nitrogen, phosphorus, and potash. Soil fertility can be measured through soil tests, but, in fact, it is relatively easy for even novice gardeners to get a sense of how fertile a soil is. If the soil is obviously sandy, very stony, or pale yellowish in color, it is probably a poor, or infertile, soil. Plant growth will be reduced, and leaves may be pale. Rich, or fertile, soils tend to be dark, and plant growth lush and vigorous.

It is a common assumption, much promoted by the garden industry, that fertility is automatically “a good thing.” In fact, most ornamental plants do not need a great deal of fertility to perform well (see page 000). Most perennials will grow well enough on most soils to be found in gardens. There are, however, some perennials that naturally flourish on soils too poor to support many other species, and so these are particularly useful for gardeners on infertile soils, sandy ones especially. An example would be purple prairie clover (*Dalea purpurea*), which flourishes on very sandy soils.

Moisture

The first thing that many of us learn about plants is that they need water. Soil moisture content does indeed have a major impact on plant growth; in particular, some plants have a greater need for water than others—or, another way of putting this, some plants survive drought much better



*4.2. A flowering cherry (*Prunus subhirtella* 'Autumnalis') in early May, with tulips and daffodils beneath and beyond. Spring plantings can be very colorful, but at the same time there is a stark simplicity about them; as the growing season progresses, perennials add more layers of complexity and interest. Whereas bulbs can make use of early season light beneath deciduous trees, perennials that grow throughout the summer will suffer reduced light once the trees have grown leaves, so they need to have some shade tolerance. (Photo: Robin Carlson)*

Using Information

Reference books and websites provide plentiful basic information about plant requirements. Books and websites that are regional in their scope are particularly useful. However, there is frustratingly little in standard information sources about long-term plant performance, particularly of perennials. The staff of specialist nurseries, rather than garden centers, can be a very good source of information, particularly those that grow a lot of their own plants. Experienced gardeners are often a mine of information, especially about longer-term issues. Books and websites are discussed on page 000.

CHOOSING PLANTS TO SUIT YOUR TIME—MAINTENANCE

Some people have a lot of time in which to garden, others very little. Hiring someone else to look after the garden is not necessarily the answer to



Plant Directory

EXPLANATION OF CATEGORIES

Basic information about the perennials, ornamental grasses, and bulbs used in the Lurie Garden is given in this chapter. Some of the gardening concepts used in this directory are explained below.

Height

This is the *maximum* likely to be achieved, under garden conditions, of the plant when in flower. There are a number of provisos:

- Plants are often shorter, especially in poorer or drier soils or if grown where there is more competition; for example, if they are grown alongside other plants in a naturalistic planting such as a prairie, they may be very much shorter.
- Perennials with tall flower stems may have a mound of foliage at a lower height.

Spread

This is difficult to define, which is why many garden reference books do not attempt to provide this information. The measurement given here is what a plant is likely to achieve in three years after planting; it is also a good measure of spacing for conventional garden planting—imagine the plant to be in the center of a circle whose diameter is the measure of spread. The provisos here include the following:

- Plants can be grown closer together—after all, in nature, plants grow very close together compared to

garden conditions; in more naturalistic plantings, this may be desirable, but there will be a tendency for plants to lose their distinctive shape and to become much more intertwined.

- Some perennials (see page 000) will continue to spread—potentially infinitely! For these, I have indicated how quickly they are likely to spread.

Season

This is given for flower interest in the Chicago area; farther south, flower interest could be earlier: farther north, later.

Garden Habitat and Cultivation

Most perennials are remarkably tolerant of a wide range of conditions; what is outlined here are the “outer parameters.” The conditions needed may well be affected by the region in which the plants are grown—notably, the farther north, the more likely a shade lover will tolerate some sun; the farther south, the more plants suitable for “light shade” will actually need full shade. “Any reasonable soil” means a soil that is not excessively dry or wet, having any texture between unimproved clay or very sandy and at least average fertility.

Hardiness Zone—Minimum

The minimum is given, as cold tolerance has been well researched. Maximum zones are not suggested—these have not been not so well studied, and in my opinion many maximum zones given in garden reference books are misleading for gardeners outside continental climate zones such as the Midwest.

Planting Companions

For an explanation of what criteria I have used, see page 000. In order to limit what could be extensive lists, only companions among other Lurie Garden plants are chosen.

Scientific Names

Also known as “Latin names,” these may look intimidating at first, but many gardeners use this botanical system as it reduces the confusion of

common names and is internationally accepted. To explain very simply: a naturally occurring plant species will have a two-part name, written in italics, such as *Ageratina altissima*, indicating that this species is a member of the genus *Ageratina*, a group of plants in the daisy family (families being the next layer up in the botanical hierarchy). Selections made for their garden or landscape value and carefully propagated by nurseries to maintain a closely defined set of characteristics are often given an additional cultivar name, indicated by not being Latinized and written in regular type, such as the aster *Symphotrichum novae-angliae* ‘Violetta’. Hybrids are crosses between distinct populations; hybrids between different and separate species are given their genus name and an English-looking second name to indicate their artificial status; an example is *Aruncus* ‘Horatio’.

Scientific names are notorious with gardeners for the way that some are occasionally changed. The most recent round of changes, which are shown here, and which particularly afflict the daisy family, are likely to be permanent, as they are based on the new and objective technique of DNA analysis.

FLOWERING PERENNIALS

***Aconogonon* ‘Johanneswolke’ (*Persicaria polymorpha*) white dragon knotweed**

Origin: A hybrid that appeared in a German nursery between two plants of Asian origin. The correct name, *Aconogonon* or *Persicaria*, is still disputed by botanists.

Height: 80 inches.

Spread: 60 inches.

Description: A gentle giant—at first sight this looks like a shrub but in fact is a perennial, collapsing with the first frosts to become invisible underground over the winter. In May, it reemerges, growing at a rate of an inch and a half a day! Do not be afraid—as, unlike its notorious relative the Japanese knotweed (*Fallopia japonica*), it does not run. Masses of creamy flower heads, turning pink with age, and a slightly disgusting scent. Very good value for almost instant impact.

Season: June, occasional flower later in the season, until September.

Garden Habitat and Cultivation: Sun or light shade. Fertile, moist soil preferable, but surprisingly drought tolerant once established. Needs



8.1. Aconogon 'Johanneswolke' (*Persicaria polymorpha*) is easily mistaken for a shrub but, in fact, is a perennial, dying back to the base every winter. Its ability to create bulk quickly makes it useful for young gardens. Flowers emerge creamy white in early to midsummer, aging to dusky pink. (Photo: Noel Kingsbury)

protection from wind. Forms a very tight clump, but roots liable to regenerate if the plant is ever dug up. Jennifer Davit adds that in the Lurie “this plant is backlit with early morning light, giving the flowers a cloud like appearance. In another location it is backlit at sunset, giving the flowers a beautiful golden hue. Proper site selection for this plant can really increase its dramatic value.”

Hardiness Zone—Minimum: 3.

Planting Companions: Combines well with shorter perennials or shrubs.

Larger grasses like *Calamagrostis*, *Miscanthus*, and *Panicum* are companions of comparable size, along with other large and bulky perennials such as *Echinops bannaticus* ‘Blue Glow’.

Agastache ‘Blue Fortune’

giant hyssop

Origin: Garden origin, a hybrid between a species from east Asia and one from North America.



8.49. *Camassia leichtlinii* 'Blue Danube' is one of several varieties of camas available from bulb companies. All are long-lived bulbs for sunny places and can be naturalized in meadow plantings, where grass is not cut until after the leaves have died back in midsummer. (Photo: International Flower Bulb Centre)

Garden Habitat/Cultivation: Full sun or light shade, moist soils, but surprisingly drought tolerant.

Hardiness Zone—Minimum: 5.

***Chionodoxa forbesii* 'Blue Giant'**
glory of the snow

Origin: A nursery selection of a Turkish plant.

Height: 9 inches.

Spread: 6 inches.

Description: Bulb with intense blue star-shaped flowers with a central white eye. *Chionodoxa luciliae* 'Violet Beauty' is a related variety, *C. sardensis* has intensely deep-blue flowers with a white eye. There are also several others available from bulb specialists.

8.50. *Known as glory of the snow, varieties of Chionodoxa are valued for their cheerful splashes of blue across the bare ground of the garden as they emerge from the chill of winter. (Photo: International Flower Bulb Centre)*





8.56. Tulip 'Spring Green' has proved the most reliable in flowering from year to year in the Lurie Garden. (Photo: Robin Carlson)

***Tulipa hageri* 'Splendens'**

Open red flowers with a black base in late April, three to five to a stem. 16 inches.

Tulipa polychroma

White flowers with yellow centers having an attractive gray-purple flush on the outside. April flowering. 6 inches.

Tulipa turkestanica

Another species with yellow-centered white flowers—twelve to a plant, and distinctly star shaped. One of the most successful in the Lurie Garden. April flowering. 12 inches. Can spread through self-seeding.