Ornamentals and Dry Weather

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This season has served as a reminder that although we can modify the environment to a certain extent, nature plays a big role in determining which plants succeed and which plants fail. The high temperatures and low precipitation levels of this summer have created drought problems across the upper Midwest. Plants generally considered to be "maintenance-free" have required rather frequent irrigation, and plants newly installed this year have been difficult to establish.

On golf courses, where irrigation systems are designed to service the turf, many ornamentals have suffered from the drought because of the extra labor and expense involved in getting water to them. It's simply too difficult to water ornamentals not within reach of the irrigation systems. Even those flower beds covered by the turf irrigation systems are suffering, since the amount of water supplied to established turf is not always adequate or frequent enough for newly planted flowers.

This is a good time to think about the relationship between dry weather and ornamentals—the effects of drought on ornamentals, methods that can be employed to reduce dry weather damage to landscape ornamentals, and some of the drought-tolerant plants to consider for dry spots.

The Effects of Drought on Ornamentals

Newly planted ornamentals, particularly those with small root systems, often suffer during dry weather because their root systems cannot take up enough water to compensate for the water lost through their leaves. An example of this is newly planted annuals. Their root systems are often very limited, while their above-ground portions are often well-developed. If they were greenhouse-grown in a peat-lite mix and then planted into a heavy soil, their roots may not readily grow out into the soil. This combination of extensive, rapidly growing stems, leaves and flowers, and limited, slowly-growing below-ground roots spells trouble in hot weather. Recently planted annuals wilt readily in hot weather, and sometimes suffer severe stunting or even death—all due to lack of water.

Shrubs and trees, if planted in early spring, suffer less damage during hot, dry weather simply because they have time to develop good root systems during the cool spring. By the onset of summer heat, their root systems are generally able to supply adequate water to stems and leaves. However, it is not uncommon in summers like this to see the stress of drought on woody ornamentals in their first year of establishment. Leaves may turn brown and dry, and in extreme cases some pruning of damaged young branches may be required.

It is less common for large trees and old shrubs to show signs of drought stress, since their roots are extensive, drawing water from a large surface area, and since many have roots that penetrate deep into the moist subsoil. However, even old, well-established plants can suffer during extended dry spells. The most common damage is browning and drying of leaf edges.

Reducing Dry Weather's Damage to Ornamentals

An accomplished horticulturist uses many cultural techniques to alter the environment enough to grow a wide variety of plants. In fact, creating "microclimates" is one of the challenges and joys of landscape gardening.

The first step in reducing the threat of drought is to evaluate the environment. In order to alter existing conditions, you must first recognize and understand them. Look at wind patterns, annual precipitation patterns, and soil qualities such as organic matter content and drainage.

Wind can be a problem in both summer and winter. For deciduous trees and shrubs, perennials and annuals, wind is a problem only in summer, because these plants do not actively grow in winter. Plants that are especially prone to drying summer winds can be planted agains a wind break such as a row of established trees or a building. Determine the direction of the prevailing summer winds, and plant accordingly. Evergreen trees and shrubs, on the other hand, often suffer desiccation because of winter winds. Evergreens continue to grow in winter, and when the winter winds cause the leaves to lose excess water, the roots often are unable to draw replacement water from the frozen ground. The "burned" leaves and dead twigs that result frequently need to be pruned out in the spring. Such winter wind damage can be reduced by planting susceptible evergreens against a winter windbreak, protecting them with a wind-blocking structure such as snow fencing or a burlap screen, or using an anti-desiccant spray.

When evaluating precipitation rates, look not only at annual totals but also at distribution throughout the year. If summer precipitation is low or infrequent, you need to irrigate. Most ornamentals do well with about 1-1.5" water per week, with irrigation as needed to supplement rainfall. Once established, most ornamentals perform better with one deep watering per week, as opposed to several light irrigations. To reduce winter desiccation of evergreens, be sure to water deeply in late fall, before the ground freezes, to be sure the plants go into winter with a water reserve.

The soil plays a very important role in water availability Always test the soil before selecting and planting ornamentals. A high percolation rate indicates a soil that allows water to pass through quickly, perhaps too quickly to be available to plants' roots. Some nutrient imbalances cause more severe problems when soil water levels are low. A soil high in organic matter will retain far more water than a mineral soil. If the soil is low in organic matter, incorporate some. Not only will water retention be improved, but nutrients will be added as well.

A very important step in reducing future problems, including drought problems, is to buy healthy plants. A healthy, well-grown, vigorous plant is better able to fend off most problems than a diseased, weak plant. Check the roots for vigorous, healthy growth. Check for good branching, good form and freedom from disease and insect problems.

Follow proper recommendations for planting, according to the soil test

results and the specific plant. Help the plant get established by providing what it needs for healthy growth. Plant during a cool period, such as spring, to promote establishment. Irrigate the plant deeply to prevent shock in the early rooting period. Watch for any signs of insect or disease problems.

Mulching is an important step in drought-damage prevention. Although synthetic mulches (black plastic, clear plastic) are available, most ornamental landscape mulches are organic (bark, shredded bark, cocoa bean hulls, wood chips, leaf mould) or natural inorganic (stone, crushed granite). Such materials, when applied in a 2-4" layer on the soil surface, prevent the pounding the water droplets from forming a hardpan at the soil surface, a process that prevents penetration. They also promote slow, even penetration of water into the soil, preventing runoff and erosion. Most mulches keep the soil somewhat cooler than ambient soil temperatures, promoting good root growth. Mulches also reduce the rate of water evaporation from the soil surface. Mulch is important not only in woody ornamental plantings, but also in flower beds. The amount of maintenance required in an annual flower bed can be greatly reduced with a mulch.

You may have noticed at some time a plant thriving in a given location, while several feet away a plant of the same species appeared to be near death. This often indicates the presence of a microclimate. Some plants have a fairly narrow tolerance of certain environmental conditions—perhaps a specific pH need, or a soil type. By understanding what the natural environment offers and what the plant requires, you can often make subtle changes that help a plant thrive in a location where it might have failed on its own. Many annual flowers, for example, require a great deal of water when planted in full light, but when planted in very light shade they continue to produce a good flower show with a reduced need for irrigation. Young shrubs establish more quickly if protected by a wind break which shields them from the hot, drying summer breezes. Planting an evergreen in a site protected from winter road salt and harsh winter winds can make the difference between failure and success. The only way to learn about microclimates is to learn the environment, learn the needs of specific plants, and experiment.

Drought-Tolerant Shrubs, Perennials and Annuals

It is far easier to grow plants adapted to the existing environment than to change the environment to suit the plants we want to grow. There are many drought-tolerant plants readily available in the nursery industry, and many of them very valuable in the landscape. These plants perform well under normal weather conditions, but they really shine during periods of drought, when they survive and even thrive without the extra care demanded by other plants. They are all suitable for golf course use—available, high quality, high performance, long season, low maintenance.

Juniperus, the genus of the "Junpiters," ranks among the toughest of evergreen landscape plants, growing in all parts of the country and tolerating a wide range of cultural conditions. Junipers range from trees to groundcovers, with several species and a tremendous number of cultivars used in the landscape industry. Although the foliage is generally described as being "needlelike," it varies greatly in texture and color from one cultivar to another. Junipers prefer full sun, sandy or light soil, and will tolerate drought very well. In the landscape, they are high-performance plants, serving as specimens, screens, windbreaks, hedges and groundcovers.

Potentilla fruticosa, the "Bush Cinquefoil," is a familiar yellow- or white-flowered shrub, 1-4' in height. It tolerates poor, dry soils and is quite free of insects and diseases. It is effective in borders, in mass plantings and in a perennial garden. Many cultivars are available, valued for their continuous flowering throughout the season.

Rhus typhina, the "Staghorn Suman" reaches 30-40' in height in the wild, suckering profusely to form large stances. In a landscape, it reaches 15-25' in height, with a loose, open, picturesque profile. It grows fairly rapidly, and offers several positive characteristics: its foliage is bright green in summer, turning orange or red in fall; the greenish-yellow flowers turn to crimson fruits in late summer; its unique form is very attractive. Staghorn Sumac is useful for massing, naturalizing, and filling in waste areas or banks. It tolerates very dry soil and does well in urban conditions. Two cultivars, *R.t.* "Dissecta' and *R.t.* "Laciniata', have more deeply divided leaflets than the species, offering a fern appearance. These cultivars are very effective as small-tree size specimens, if the suckers are controlled.

The roses are often considered very high maintenance ornamentals, but some of the shrub roses are not only low-maintenance, they also tolerate drought and other adverse conditions. *Rosa rugosa*, the "Rugosa Rose," is 4-6' tall and 4-6' across, a sturdy shrub that grows quickly. The clustered flowers are pink or white, present most of the summer. Rugosa Roses are easy to grow, tolerant of salt (they're common seaside plants), adaptable to many soils, and tolerant of drought. They are excellent for difficult spots like sandy banks. Another rose, *Rosa virginiana*, the "Virginia Rose," reaches a height of 6'. It has excellent crimson and yellow autumn color, persistant red fruits, and reddish stems in winter. It is also tolerant of sandy and salty soils. Both of these shrub roses are very vigorous, but prone to some insect and disease problems that may require control.

Among the many outstanding viburnums, *Viburnum prunifolium*, the "Blackhaw Viburnum," is one of the outstanding specimen shrubs for a droughty location. It reaches 12-15' in height, forming a rounded or multi-stemmed shrub with stiff branches and a course winter texture. The dark green leaves turn purplish in fall, and the white flower clusters are attractive in May. The Blackhaw Viburnum is used most effectively as a specimen, in a mass planting, or in a shrub border.

Among the drought-tolerant perennials, *Achillea filipendulina* is an excellent choice for the golf course. Its ferny gray-green foliage remains good quality all season, and its golden-yellow heads appear in mid-summer, lasting several weeks. *A.f.* "Coronation Gold' reaches 3-4' in height, while several cultivars are 2-3' in height.

The Daylilies, or *Hemerocallis*, are well-known as tough, hardy, free-flowering erosion control perennials. With a proper selection of cultivars, a garden of Daylilies can produce flowers from late May through August with very minimal care.

Limonium latifolium, or "Sea Lavender," is a good candidate for the golf course. It is very hardy, forms a low mat of large, dark green leaves, and produces a 3'-tall cloud of tiny lavender flowers in late summer. It is high quality all summer, requiring only deadheading at the end of flowering. Since the flowers dry on the plant, they can be left until the end of the season if desired.

Many succulents are hardy, and most tolerate droughty conditions. *Sempervivum* species, called "Hen and Chicks," make an excellent edging plant around a flower garden, with neat rosettes of thick, gray-green leaves. The genus *Sedum* offers several hardy perennials, from *S. acre*, the "Gold Moss Stonecrop," with its very low-growing mat of foliage and bright yellow flowers in spring, to *S. spectabile*, the "Showy Stonecrop," a 2-3' perennial with pink or red flower clusters in late fall.

Yucca smalliana, "Adam's Needle," is a 2' spiky-appearing perennial that sends up a 4' cluster of striking white flowers in midsummer. This perennial is effective as a single specimen, as a mass planting or as a part of a mixed shrub border. Native to dry regions of the Southeast, it is very tolerant of drought.

Among the drought-tolerant annual flowers, "Dusty Miller" is outstanding. The common name refers to members of the genera *Centaurea, Cineraria, Chrysantemum,* and *Senecio*, but whatever the genus the plant is outstanding. Its neat 8-12" bushy form combined with its silvery-white, dissect foliage and tolerance of adverse environmental conditions make it a very desirable annual in any garden.

The "Morning Glory," *Ipomoea tricolor*, is an old-fashioned annual vine offering pink, lavender or blue funnel-shaped flowers. Newer selections have green-and-white foliage, and some branch well enough to be used as an annual groundcover-like edging around an annual bed. Morning Glories tolerate a wide range of environmental conditions, but flower best in poor, dry soil.

"Annuala Statice" is *Limonium sinuatum*, a common dried flower which has recently become more available as a bedding plant. The flat rosettes of foliage produce 2-3' tall blue, white, pink or yellow "straw-like" flowers. It thrives in drought, and serves as a good filler plant in an annual flower garden.

Mesembryanthemum is an umbrella-generic name for a group of plants commonly called "Ice Plants." These low-growing plants are frequently seen as groundcovers along the highways of California, and are becoming quite common as annual flowers in dry spots of the upper Midwest. Flower colors include pink, white and yellow, and the daisy-like flowers are prolific all summer. The foliage is quite succulent and grainy in texture, with fleshy, glistening bumps that give the plants their common name.

Sanvitalia procumbens, the "Creeping Zinnia," is the ultimate low-growing annual plant for a hot, dry location. The tiny yellow or orange daisy-like flowers are abundant throughout the entire growing season, and the plant requires no maintenance. This is a plant that belongs in every garden, as an edging plant, a hanging basket specimen in a hot location, or cascading out of a planter.