


Native Plants:

Drought Tolerance and Pest Resistance

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Native plants provide food and habitats for native insects, birds, and other creatures, allowing gardeners to support local ecosystems. Native plants are popular and with good reason: they are well-suited to their native environments and many species are quite beautiful.

Native plants grow where they do because they have adapted to those specific environmental conditions. For example, some plants will only germinate seeds in bare, mineral soil. A thick layer of pine straw or leaf litter on the surface of the soil will prevent the seeds of these species from germinating. Some upland species require alkaline soil, rocky soils, or rock crevices in which to attach their roots. Many native plants have evolved to thrive in very specific areas called “ecological niches” and will not grow and reproduce in cultivated landscapes as well as they do in their native habitat. Others thrive in a much wider range of environments.



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Can Native Plants Survive Without Supplemental Watering?

A native plant in its native environment, incorporated in the landscape and left undisturbed, will require little or no supplemental water under most circumstances. To be preserved, native green spaces must be clearly defined and protected during development. Today, a growing number of developers are creating “native green spaces” within residential communities, office complexes, and shopping centers by integrating native, undisturbed environments into their plans.



Unfortunately, native environments seldom survive the building construction process. As property is developed, existing vegetation is removed. The earth is bulldozed and moved to create parking areas, foundations, and basements. Topsoil is graded away or buried. Trucks and construction equipment compact the soil. What remains is a harsh, new environment for both native and introduced species.

Few established environments in Georgia’s metropolitan areas can comfortably be classified as “natural” or “native.” Urban areas are usually subjected to moderate to heavy pedestrian traffic. They may be fertilized, irrigated, shaded by buildings, and subjected to pollution and heat island effects.

Urban locations may contain non-native plants that were either planted or have successfully invaded the area. Many invasive exotic plants species thrive in Georgia. As a result, metropolitan areas often have non-native biotic communities.

Can Native Plants Be Transplanted?

Native plants can be purchased and planted. Transplanted native species can do as well as those in the wild, but transplanting is stressful to the plant. Native or not, newly installed plants require supplemental water during establishment.

When a plant is not sited in a location that closely matches its native habitat, more intervention will be required to promote its survival. It is more likely to become stressed, perform below optimal levels, and eventually die. For example, partridge berry (*Mitchella repens*), a lovely evergreen groundcover, is found in forested areas and prefers partial shade and humus-enriched soil. If planted in full sun and unamended clay soil, it will decline until it dies.



Partridge berry, *Mitchella repens*, has white flowers (left) that mature to red fruit (right).
Photos: Hugh Nourse, former UGA Extension Master Gardener volunteer

Are Native Plants Drought Tolerant?

Drought is a normal component of the climate system in the Southeast United States. Thirteen long-term droughts have occurred between 1680 and 2003 (Stooksbury, 2003). Recently, the Southeast U.S. suffered another historic drought from 2006 to 2008 (Chaisson, 2012). As our native plant populations have survived such droughts, it's clear that they have adequate drought-survival mechanisms. It should be noted, however, that even the most drought-tolerant native plant would not survive if its minimum water requirements were not met.

It is a common misconception that all native plants are drought tolerant. Some native plants require moist or swampy sites and will grow poorly on dry sites without supplemental irrigation during periods of limited rainfall. Examples include inkberry (*Ilex glabra*), Virginia sweetspire (*Itea virginica*), swamp magnolia (*Magnolia virginiana*), oakleaf hydrangea (*Hydrangea quercifolia*), and Carolina yellow jessamine (*Gelsemium sempervirens*).



From left to right: inkberry, swamp magnolia, Carolina yellow jessamine, oakleaf hydrangea, Virginia sweetspire.

Photos: Bodie Pennisi, University of Georgia

Are Native Plants Pest-Free?

There is also a false perception that native plants never require pesticides to maintain their optimum appearance. Native plants serve as host plants for both insects and plant pathogens. In fact, one of the benefits provided by native plants is that they support native insects, which are food for birds and other wildlife.

Non-native pests also use native plants for food. Some species of native azalea (*Rhododendron austrinum*, for example) can be just as readily infested by the accidentally introduced azalea lace bug (*Stephanitis pyrioides*) as their exotic evergreen counterparts (Braman et al., 1992). Piedmont azalea (*Rhododendron canescens*) and plumleaf azalea (*Rhododendron prunifolium*) are two native azaleas that have demonstrated high levels of resistance to azalea lace bug. However, they have their own contingent of native insect plant pests (leafhoppers, caterpillars, true bugs, and beetles) that feed on their flowers, foliage, and stems (Braman & Beshear, 1994).



Piedmont azalea (*Rhododendron canescens*), left, and plumleaf azalea (*Rhododendron prunifolium*).

Photos: Carol Robacker, University of Georgia

Damage caused by azalea lace bug on a native azalea and lace bug on the underside of leaves.

Photos: Shaku Nair, University of Arizona volunteer

Leaf rust, caused by the fungus *Pucciniastrum vaccinii*, infects several native deciduous azaleas, including pinxterbloom azalea (*Rhododendron periclymenoides*), plumleaf azalea (*R. prunifolium*), and swamp azalea (*R. viscosum*; Bir et al., 1992). Proper plant placement in the landscape can reduce the likelihood of infestation and damage, but expectations should not be unrealistic. Native plants are not pest-free.

There are many good reasons for using native plants in the landscape. When left undisturbed, they are self-sustaining and low-maintenance. They provide wildlife habitats. They help restore the natural ecology of an area and discourage the encroachment of non-native invasive plants. Furthermore, many native plants have unique qualities that cannot be equaled or surpassed by non-native substitutes.

University of Georgia Cooperative Extension offers several excellent publications on native plants, including Bulletin 987-1, Bulletin 987-2, and Bulletin 987-3. However, native plants grown outside their native habitat are not necessarily more drought-tolerant, low maintenance, or self-sustaining than their non-native counterparts. The concept of using regionally adapted plants—and placing the right plant in the right place—is more critical to survival and adaptability than the plant’s geographic origin.

Summary

- Native plants provide many ecological benefits.
- Native plants can be self-sustaining and low-maintenance.
- In order to thrive, native plants must be grown in native environments or environments that simulate their native habitat.
- Native environments rarely exist in urban environments.
- Native plants grown outside their native habitat are not necessarily more tolerant of limited rainfall than non-native plants.
- Not all native plants are low-water-use plants.
- Even native plants that exhibit a degree of drought-tolerance at maturity often require supplemental water throughout their establishment periods.
- Native plants may require pesticides to maintain optimum appearance.



Leaf rust on native azalea.
Photo: James Buck, University of Georgia

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