

# Plant Talk

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## Going to Drought School

by Michael Yanny

What a year!!!

The Drought of 2012. We'll be talking about this year's weather for the rest of our lives, just like the old timers now talk about the drought of '88 and the real old timers talk about the drought of '36. This has been an amazing stretch of weather, and just like the droughts of '36 and '88, we can learn from it. These are some of the lessons I learned at Drought School 2012!

Perhaps the two biggest surprises to me were the incredible declines of Japanese Tree Lilac (*Syringa reticulata*) and Burning Bush (*Euonymus alatus*) (see pictures on page 2) in established unwatered landscapes. I noticed this throughout the Milwaukee metro area especially with plants that were located on berms or in relatively small planting beds. I think these two plants have one thing in common that makes

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Mike's first day at Drought School.

them very susceptible to drought decline. They each have very fibrous, compact root systems. When we dug small bareroot transplants of these plants in the past, it was always very difficult to shake the soil from the roots of these two species. My theory is that this type of root system design is a disadvantage in a drought. Burning Bush and Japanese Tree Lilacs suck up all the water and nutrients much quicker than most plants which have their roots distributed over a broader less dense area. When rain doesn't come, they are left high and dry.

Another group of plants that took it on the chin were the *Astilbes*. Not that I wouldn't expect that, but I had always been under the impression that the *Astilbe chinensis* types (*Astilbe* 'Visions' series, *Astilbe chinensis pumila* and Purple Candles *Astilbe*, *Astilbe chinensis* 'Purpurkerze') were much more drought tolerant than they showed this year. I've always thought of them to be men among boys in the *Astilbe* genus. They are relatively tougher than other species of *Astilbe*. This year, the *A. chinensis* and its hybrids fried up in the drought and lost all of their foliage. However, most of the unwatered *Astilbe chinensis* types are coming back as the drought has subsided. Many of those that do not have any *A. chinensis* in their parentage are dead. So what the drought has taught me is that *Astilbe chinensis* requires supplemental water to look good in dry situations. Non-*Astilbe chinensis* types will have

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to be babied. After this year, I say, *Astilbe chinensis* and it's hybrids are boys among babies in the Astilbe relation—not men among boys (see pictures on right).

Among conifers, various dwarf spruces struggled with the drought and heat. I saw scorching on *Picea abies* cultivars as well as *Picea glauca conica*. These dwarf varieties are typically rooted from cuttings and have very different root systems than the standard sized plants that are grown from seed. The dwarf cultivars roots are usually more shallow and horizontal growing than the deeper root systems of the seed grown standard sized plants of the same species. I suspect this is why the dwarfs suffered more in this years drought than standard sized plants of the species (see pictures below).

Most other conifers have performed admirably in the drought. Pines look outstanding. Junipers were not phased by the lack of water. There was some branch die-back damage on some young, fast growing Arborvitae in a low lying area of our nursery, but I attribute that damage primarily to a weather event that occurred in the late winter. It was a bark splitting episode caused by rapid temperature fluctuations. Some stems were completely girdled while others were damaged ½ or ¾ of the way around. The arborvitae stems blasted apart by this late winter event then had to deal with the drought. It was not a situation that was conducive



Top left: Japanese Tree Lilac showing severe scorch. Top right: *Astilbe chinensis pumila* recovering from drought Middle right: *Astilbe jap. 'Ellie'* drought damage (it did not recover). Bottom left & right: Burning Bush were among the shrubs most severely damaged.

to rapid healing, so many plants showed sporadic browning in the summer. I suspect many of the branches would have had a chance to heal and survive if not for the severe drought we had. I did not notice any of this problem occurring out in landscapes in Southeast Wisconsin. Overall the arborvitae in our area fared well this summer.

New transplants left to their own devices performed poorly. Most trees that had been transplanted in the last few years had to be watered in order to survive this drought. One particular street tree planting I have been observing for the last five years was especially telling. The trees were in a median strip with minimal care since they were planted about 5 years ago. I noticed trees in this location that did well and others that struggled. I suspect that some are still not fully established from transplant even though it has been five years since planting. The drought pointed this out to me. Some Green Ash trees lost a considerable amount of foliage as the



Left: Star Power™ Juniper fared well in the drought. Right: *Picea abies 'Pumila'* & *Picea glauca conica* browning from drought.

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drought set in while others of the same species planted at the same time maintained their appearance and held onto their leaves. I suspect those that lost leaves still did not have a full set of roots established from transplant. The drought demonstrated the degree of establishment of the trees in this median strip (see picture on right).

Soil type had a major effect on whether plants were able to make it through the drought. My friend Neil Diboll of Prairie Nursery in the central sands region of Wisconsin told me about his observations of plants near or at his nursery in Westfield. When I visit Neil, I'm always amazed at the differences in the plants in his part of the state versus my southeastern area. I always tell him that my going to the sand country is like going to the moon. It's foreign to me. Anyway, here are some of Neil's "other worldly" observations:

Many arborvitae totally fried in the sand. In the clay-loam of the Southeast they were fine. In the sand country, standard sized Norway spruces were not spared like they were in the Southeastern part of the state. Neil told me of a large specimen tree that he drives past on his way to work that was severely damaged by the droughty, sandy condition. He said, Magnolias are a bad choice for his soils. Neil's primary area of expertise are prairie plants. He gave me some very interesting insight into what happened to some of the prairie plants in his area. He said he had never seen Big Blue Stem (*Andropogon gerardii*) and Little Bluestem Grass (*Schizachyrium scorparium*) compromised by a drought like they were this year. In '88, he said Little Bluestem stopped growing and turned a powdery blue. This year many of the plants did the same thing but some also had leaves brown out. The Big Bluestem kept all of its leaves in the drought of '88. This year, there was leaf browning on portions of many plants in very dry sands. Plants in heavier soils showed no browning. Another of Niel's observations that confirmed the drought of '12 was worse than that of '88 was the wilting of Butterfly Weed (*Asclepias tuberosa*). He had never seen this occur before. Some plants that he saw that were not phased by the drought even in



Left: A Green Ash Tree, not fully established showing thinning foliage. Top right: Bur Oak fared well in the drought. Bottom right: Cracks, 3/4" across could be found in the ground.

his dry sand, included: Showy Goldenrod (*Solidago speciosa*), Compass Plant (*Silphium lacinatedum*), Hairy Wild Petunia (*Ruellia humilis*), Nodding Pink Onion (*Allium cernuum*), Lead Plant (*Amorpha canescens*) and Purple Prairie Clover (*Dalea purpureum*). Plants in the sand really have it tough in a drought. It should give us a greater appreciation for the heavy soils of Southeast Wisconsin.

On the next page are two lists of my observations of specific plants that I noticed either performed admirably here during the drought or showed significant damage from the drought. I'm sure others could make lists that differ considerably from mine. These were the plants that made an impression on me.

The drought of 2012 was a terrible weather event for many of our businesses and plants. It's not something we want to see again for many years. However, it was a great learning experience. It allowed us to better understand the drought tolerances of plants we work with. I'm sure all of you have your own set of observations from this experience. Be sure to write them down so you can tell your grandchildren about the Drought of 2012. And that you learned a great deal in this very historic year.

## Plants that Performed Very Well in SE Wisconsin during the Drought of 2012

### Trees:

<i>Acer miyabei</i> ‘Morton’	State Street™ Miyabei Maple
<i>Aes. glabra</i> x <i>octandra</i> ‘Homestead’	Homestead Buckeye
<i>Aesculus turbinata pubescens</i>	Chinese Horsechestnut
<i>Carya ovata</i>	Shagbark Hickory
<i>Catalpa speciosa</i>	Northern Catalpa
<i>Celtis occidentalis</i>	Common Hackberry
<i>Crataegus</i> sp.	All species of Hawthorn
<i>Corylus colurna</i>	Turkish Filbert
<i>Ginkgo biloba</i>	Ginkgo
<i>Gleditsia tricanthos</i>	Honeylocust
<i>Gymnocladus dioica</i>	Kentucky Coffeetree
<i>Ostrya virginiana</i>	Ironwood
<i>Pyrus</i> sp.	Ornamental Pear cultivars
<i>Quercus</i> sp.	All Oak species and cultivars
<i>Ulmus</i> sp.	All Elm species and cultivars

### Conifers:

<i>Juniperus</i> sp.	All Junipers and cultivars
<i>Pinus sylvestris</i>	Scots Pine
<i>Pinus cembra</i>	Swiss Stone Pine

### Shrubs:

<i>Aronia melanocarpa</i> var. <i>elata</i>	Glossy Black Chokeberry
<i>Amelanchier stolonifera</i>	Running Serviceberry

<i>Diervilla lonicera</i>	Dwarf Bushhoneysuckle
<i>Cotoneaster lucidus</i>	Hedge Cotoneaster
<i>Corylus americana</i>	American Filbert
<i>Hypericum kalmianum</i>	St. John’s Wort
<i>Rhus</i> sp.	All <i>Rhus</i> species and cultivars

### Perennials:

<i>Allium cernuum</i>	Nodding Pink Onion
<i>Amsonia tabernaemontana</i>	Willow Bluestar Amsonia
<i>Asclepias tuberosa</i>	Butterfly Weed
<i>Baptisia</i> sp.	<i>Baptisia</i> species and cultivars
<i>Clematis recta</i>	Ground Clematis
<i>Dalea purpureum</i>	Purple Prairie Clover
<i>Eryngium yuccafolium</i>	Rattlesnake Master
<i>Ruellia humilis</i>	Hairy Wild Petunia
<i>Silphium</i> sp.	All <i>Silphium</i> species

### Grasses:

<i>Andropogon gerardii</i>	Big Bluestem Grass
<i>Chasmanthium latifolium</i>	Northern Sea Oats
<i>Panicum virgatum</i>	Switch Grass
<i>Schizachyrium scorparium</i>	Little Bluestem Grass
<i>Sporobolus heterolepis</i>	Prairie Dropseed Grass

## Plants that Incurred Significant Damage in SE Wisconsin during the Drought of 2012

### Trees:

<i>Acer saccharum</i>	Sugar Maple
<i>Alnus rugosa</i>	Speckled Alder
<i>Cornus alternifolia</i>	Pagoda Dogwood
<i>Magnolia</i> sp.	All <i>Magnolia</i> species and cultivars
<i>Syringa reticulata</i>	Japanese Tree Lilac

### Conifers:

<i>Picea abies</i> /Dwarf cultivars	Norway Spruce/Dwarf cultivars
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### Shrubs:

<i>Aesculus parviflora</i>	Bottlebrush Buckeye
<i>Euonymus alatus</i>	Burning Bush
<i>Hydrangea</i> sp.	All <i>Hydrangea</i> species and cultivars
<i>Staphylea trifolia</i>	Bladdernut
<i>Viburnum cassinoides</i>	Witherod Viburnum and its cultivars
<i>Viburnum dentatum</i>	Arrowwood Viburnum and its cultivars
<i>Viburnum lantana</i> ‘Mohican’	Mohican Viburnum

<i>Viburnum lentago</i>	Nannyberry Viburnum
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### Perennials:

<i>Aralia racemosa</i>	Spikenard
<i>Aruncus aethusifolius</i>	Dwarf Goatsbeard
<i>Asarum canadense</i>	Canada Wild Ginger
<i>Astilbe</i> sp.	All <i>Astilbe</i> species and cultivars
<i>Brun. macrophylla</i> ‘Jack Frost’ PP13859	Jack Frost Siberian Bugloss
<i>Chelone lyonii</i> ‘Hot Lips’	Hot Lips Pink Turtlehead
<i>Epimedium</i> sp.	Various <i>Epimedium</i> species and cultivars
<i>Geranium maculatum</i>	Wild Geranium
<i>Hemerocallis</i> sp.	Daylily
<i>Lamiastrum gal.</i> ‘Herman’s Pride’	Herman’s Pride Archangel
<i>Phlox paniculata</i> cultivars	Phlox cultivars
<i>Pulmonaria</i> sp.	Lungwort
<i>Rud. spec.</i> ‘Viette’s Little Suzy’	Viette’s Little Suzy Black-eyed Susan
<i>Smilacina racemosa</i>	False Solomon’s Seal

Plant lists are not meant to be comprehensive of all plants in Southeast WI, but plants that Michael Yanny observed first hand in his travels.