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What's Coming Up: This week's garden news

Janet Macunovich and Steven Nikkila help you grow
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In this Ensemble *What's Coming Up* pdf*

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Right: Here's a plant likely to be hurt by its holiday decor. However, most people wouldn't know to link the tree's later decline to the lighting. Read about it on page 3.

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Greetings!

In working on this issue we started reviewing the year by strolling over to shade garden questions posed by our 93 year old poet gardener, Frank Harney. We dug up a wheelbarrow load of shady secrets we share here: Plant lists, garden lay-out, watering, mulching and virtual x-ray glasses for you to "see" the tree roots that compete with your garden.

Looking into holiday lighting and its effects on trees turned into a similar romp, ranging from the differences between rhododendrons in the Great Smoky Mountains and those in our gardens, to mums with patchy bloom and all the way over to a mysterious pink-flowered perennial for December.

We lagged behind in publishing this fall and hoo boy did all the administrative details of website management pile up. In addition, hackers tried again to usurp our Forum. Although they didn't succeed they did make a mess of things behind the scenes. Thank you to Forum Members who let us know what aspects of the attack they were seeing, which helped us point the computer techs to all the right

places. The techies did have to strip off our Forum's "skin" to clear the decks. Bear with us while we make the time to reinstate our proper colors and fonts, but don't hesitate to post your questions and comments there as it's up and running safely again.

We used the forced time away from the newsletter to catch up and also reorganize -- we'll be telling you all about that next time, in a report on completing..... drumroll please: *our first year on line*.

Who are Janet & Steven?

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2/5/13 in South Lyon, Michigan, Topic to be announced
2/9/13 in Toledo, Ohio, Collectors' Gardens and Entry Garden Design
2/16/13 in Chagrin Falls, Ohio, Entry Garden Design and Visualizing Landscape Changes
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In the department, ***Main features***
Light the night... without ruining the garden

We love lights during the long dark winter nights. We also love our gardens. Don't let your love of one damage the other.

I was told recently that the reason my rhododendrons don't bloom is because we put lights on them for the holidays. They need total darkness, this person said.
If that's the case it would solve a long standing mystery but we're seriously doubting it. Our neighborhood goes all-out on lights, yet rhododendrons bloom on our block every spring. Maybe the bushes we see bloom are the same ones that we see lit up but we think they are.

So what's the straight scoop? Okay to light the lights? - D.S. -

Light the lights! Rhodies don't mind night light. And we do have some thoughts about the no-flower situation.

The decrease in day length as summer wanes does spur Rhododendrons to form their flower buds but they don't need such a long night as some species, including poinsettia and garden mum. They are also less sensitive to nighttime light during bud formation than some other plants.

By winter, Rhododendron flower buds are set. Then the plant is indifferent to night lights. At that point, all it needs is cold (40°F or below) for six weeks or more to finish flower development.

Once the big flower buds are set (*center and right in photo at right*) on a *Rhododendron*'s branch tips, you can be pretty confident of the next spring's bloom. By the same token, it's too late by winter to coax flower buds to form on branches that set only small vegetative buds (*in the photo, arrow lower left*).

After that, those buds will open after being consistently warm for at least a few weeks. Early blooming rhodie varieties bloom three weeks into spring. Later varieties need more time.

It's light-ers, not lights, that pose potential trouble

When it comes to holiday lights, our worries revolve around broken branches, girdled trunks and ruined soil.

- Limbs break when people yank wires in a hurry to be done removing the lights.
- Girdling can happen when cords that encircle branches or trunks are left in place into the growing season.
- Ruined soil comes from heavy feet on cold wet ground.

These are the things pros in botanical gardens guard agasint as they light their landscapes.
(See *Growing Concerns 594*'s Short Report for lighting tips from the gardeners at Longwood.
http://www.gardenatoz.com/what%27s-up!/ensemble-weekly-editions/late-fall/grow-594-lemon,-arborvitae,-holiday-lights/)

About the lights shown in the photo on page 2:
1) We love the look of a light encrusted tree trunk and main limbs, but see that the monumental task of wrapping all those lights leads many people to say, "Let's just leave them there until next year..." ...a leaving that sometimes goes on for years. Trunks and branches can increase significantly in girth each spring, and even a string wound tight around can girdle the limb, killing everything above the constriction.
2) If the strings of lights looping around a little tree lay on thin or brittle branches, they may well cause damage. Limbs break when the extra weight of snowy or ice-crusted wires comes to bear, or when the de-lighting technician gets impatient in spring.

About the lights on the big spruce, page 1:
This tree is a likely candidate for damage due to its holiday decor. However, most people wouldn't know to link the tree's later decline to the lighting. Here's the connection: If the spruce is in a bed -- as it should be since its feeder roots are concentrated just outside the drip line and do not compete well with lawn grass -- then the wet, cold soil there can easily be trampled to root-killing airlessness by lots of circling and jumping up to poke lights into place.
Read about soil stomping fixes in *Growing Concerns 640*, Green Thumbs Down:
http://www.gardenatoz.com/what%27s-up!/ensemble-weekly-editions/fall/grow-640-store-tender-plants,-mulch,-slugs,-fertilizer,-lawn,-lights/

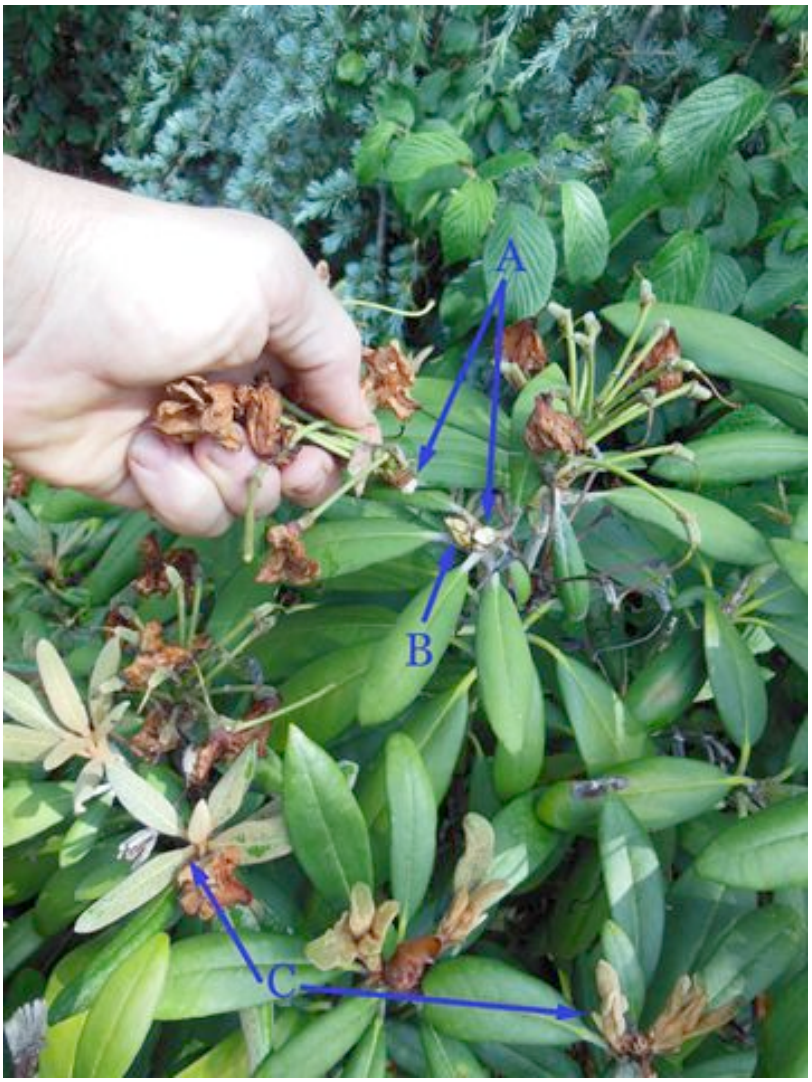
About the no-flower mystery. These things can quash a rhododendron show:

- Too much shade. (Only a few *Rhododendron* varieties perform well in full shade, such as those with lots of *R. maximum* in their lineage.)
- Nutritional deficiencies. (Often related to high pH; rhodies need acid/low pH.)
- Harsh winters. (Can freeze-dry the buds; such plants would show leaf damage, too.)
- Being sheared* or having all their branch tips clipped off** *after early August*. (When too little growing time remains for new shoots to form flower buds.)

Right, about pruning Rhododendron*: You might take it to be boxwood, that undulating enclosure punctuated by Japanese maples. However, it'sthe* Rhododendrons *called azaleas, at Portland, Oregon's lovely Japanese Garden.*

***Sheared?! You bet, if that's the look you like.**
For proof, just stroll a few traditionally maintained Japanese gardens to see azaleas flowering even though they are tightly sheared as on the previous page. (Azalea is simply the common name for various species of *Rhododendron*.)

Loathe to ever cut a rhodie?
We can hear the wails from mid-continental gardeners who hesitate to clip even one branch, because these plants grow so reluctantly in their gardens. Yet in favorable environments they grow vigorously and can indeed be sheared and shaped.



****Why might you clip the branch tips?**
Some people do it to remove the visual mess of spent blooms. Do this or other pruning without qualm as long as it's done within about a month after the plant blooms.

Above, right: Here we're deadheading a Rhododendron *in early July by snapping off (A) the individual spent flower parts. If we were short on time and didn't mind the tight-cropped look, we could shear the whole plant, removing spent blooms and new tips. Buds such as B, yet to open, still have plenty of time to grow, mature and set flower buds.*
Notice that branches which did not bloom this spring commenced new shoot growth (C) sooner than the branch that was busy flowering. That's why branches that bloomed one year may not bloom as well the next -- they engage in "alternate year bloom" because new shoots get going too late. Early deadheading might even out the show on a plant that's stuck in an alternate-year bloom pattern.

Above, left: What's favorable for a rhodie, to lead to great growth? How about on a slope where water constantly trickles down toward a stream, in the moist air of Great Smoky Mountains National Park? Yup, that's a wild Rhododendron *Janet's exclaiming over, putting to shame many a garden variety shrub that bears its genes.*

More on pruning a *Rhododendron* in *What's Coming Up #86*.
http://www.gardenatoz.com/what%27s-up!/ensemble-weekly-editions/early-spring/what%27s-up-86-pruning,-shady-groundcovers,-ash,-pine/

In the department, ***Main features***
When long nights spur bloom

About plants that need long nights

Many plants are spurred to change their growth -- to form flower buds, stop elongating, etc. -- by seasonal changes in daylight. Most follow a combination of cues, so temperature, moisture, plant age and day length all come together to bring about the change.

Others, called "short day plants" or "long night obligates" cannot form flowers unless there is a period during their active growing season when there is unbroken darkness for a relatively long time in each 24 hour period. Species vary in how long the night must be, and for how many weeks they must experience that daily dose of darkness.

Garden mums (*Dendranthema* spp.) are long-night obligate plants that require 10-12 hours of darkness to bud up. Poinsettias], jades (*Crassula*) and kalanchoes have similar needs. They're pretty demanding -- the darkness has to be continuous, and strong or lasting light during the night can disrupt flower formation.

Above: Flower buds simply will not form on a mum if the nights aren't long enough to cause the right dark-induced chemical mix.

Left: A Kalanchoe *can bloom for months, once it gets started, but then may go years without reblooming because the gardener doesn't know to keep it dark at night.*

Professional growers use controlled greenhouse lighting and blackout cloth to create long nights for just the right number of weeks. Then their crop is in bloom just when buyers want a poinsettia in December or a kalanchoe for Valentine's Day. The gardener who decides to keep growing that plant and wants another round of bloom the next winter should be sure as fall comes to keep it in a room that's sunny by day but dark from sunset to sunrise.

Both mums and muggers are thwarted by a light

We had an "Ah-ha" moment this fall related to mums' need for long, unbroken nights.

A client asked in September, "Are those mums ever going to bloom? I don't even see any buds."

The plants in question had bloomed in pots on the porch the previous fall and survived winter in that exposed situation. We'd decided such tough characters should be planted into the garden. Now, they were still green while other mums in the yard were in full bloom.

"They sure should," Janet replied. "They were blooming by now last year! But some mum varieties are later to bloom than others and maybe these are late types that were manipulated by the grower before we got them, given long nights early in a greenhouse... Let's give them some more time."

Two weeks later, flower buds appeared, but not on every branch tip. The mums eventually opened their flowers in a patchy show... after Thanksgiving!

"That's odd," Janet said, "it's almost as if only this side of each plant is dark. Like there's light coming from over..."

When she turned she saw the security light. "I never noticed that light. Do you leave it on at night?"

"We sure do."

"Ah. So, only the part of the plant that isn't lit by the light can bloom."

Right: The disruptive light came from above and left (arrows) so only low branches on the right side and back of each plant had the necessary darkness to produce yellow flowers.

Below: Here's what Janet saw. She had missed the connection between site and mum's needs. Do you see the security light that's the culprit? We'll move them far from that night light, next year.

What's pink and blooms in December in zone 5-6?!

Because we know you'll ask about these coincidental pink flowers (*inset, lower left)*: Those are plants that were already established in this garden when we came on the scene. The owner's no longer sure of the name but we're fairly certain it's Nerine bowdenii. It's a summer-dormant South African "bulb" normally only hardy to about 5°F -- zone 7. It found itself a sheltered place in this zone 6 yard.

Incidentally, we don't see many nerines since they're not usually hardy in zone 6, but where

we do see them, they come into bloom in October, not early December when we took this photo. We don't think the light is causing that late bloom, however. Probably they're just late all round, since this foliage doesn't emerge until spring where in milder climes it emerges right after the bloom fades and remains through winter.

Jade loves long nights, too

Twelve-hour nights don't come until early September in our garden. Our jade needs 21 to 28 of those long nights plus some cold to prompt it to form flower buds.

Since we like to see it bloom when we bring it in for the winter, we leave it out long into October. It's a challenge to guess whether a given night might be too cold, so sometimes the frost catches it, even on our covered back porch. We'll tell more of that tale next week.

Right: Arrange for a jade to have a few weeks of cool 12 hour nights and it will bloom. If you keep it outdoors in fall and watch the weather so you know to bring it in to a dark room on any frosty night, you can engage Nature to give it those conditions.

In the department, ***This week in our gardens***

Failures that tell important tales: A little pain, lots of gain

Review what worked and didn't as you plan next year's garden

Our gardens take a rest in winter but our brains grow on. Winter's the time to review what worked and what didn't, and there is no statute of limitations on the review. Sooner is best, while memories are clearer, but it's never too late to think back. At worst, we laugh at ourselves and move on, avoiding any repeat of that mistake. At best we pat ourselves on the backs and do our best to recreate the glory.

For instance, poet gardener Frank Harney posed us a puzzle that's been bugging him for years:

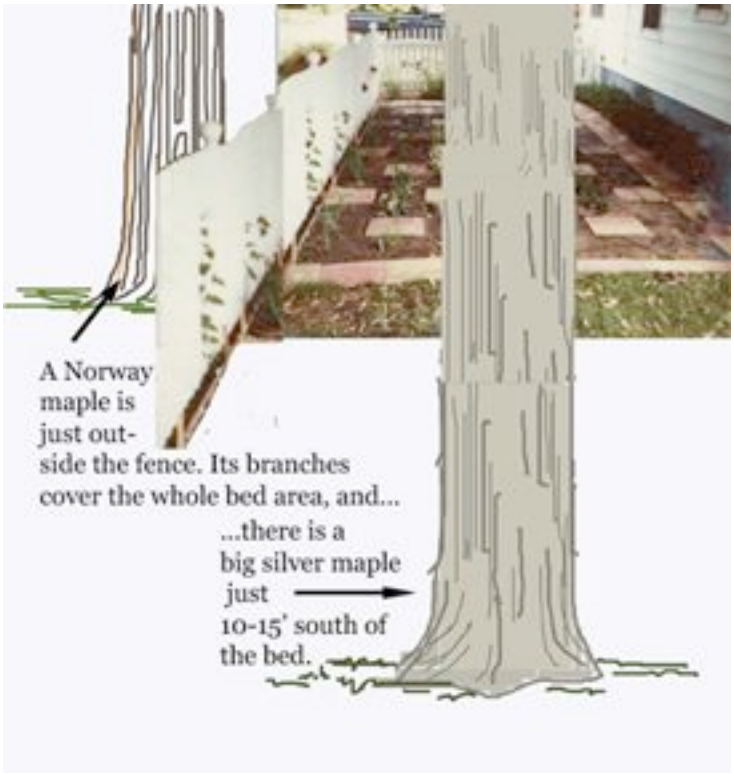
Hi kids.....
The most thoroughly researched, meticulously measured, designed, executed plan since the Pyramids.... and it FAILED!!!

Roughly 12' x 20', full shade, thus the research, plants chosen for their shade tolerance, hardiness, beauty, all to no avail.

Its own sprinkler system, half inch black plastic with punch-in nozzles, one for each plant, hah! That Norway maple must've been a regular sponge. Couldn't keep enough water on the area to keep it damp.

Three different types of ferns, bell flowers, bleeding hearts and other varieties I no longer remember. ALL GONE!!

I still have the bird bath, the red and buff blocks (now a patio and part of my walk to the garage). I still had one bleeding heart until I saw that my daughter had discarded the wire cage and plastic ring that marked the spot after it had gone dormant, and planted a lavender. I'll wait til spring to see which one prevails. Oh yes, primulas, or primroses, whatever. Some of those made it and I gave away the last of them last year when I was "cleaning up."



Right: We went and looked at Frank's garden, and added these details to his photo.

We think you hit the biggest nail right on the head, and that's the Norway maple.

(*Acer platanoides*) are vicious competitors on three counts:

• First, they block all the light for a very long season beginning at bloom time -- their yellow-green flowers are so abundantly borne (but rarely recognized as flowers!) that the branches cast dense shade even before the leaves emerge. The shade continues thick until leaf fall, which comes later than most other trees. Only oaks, callery pears and buckthorns outlast 'em.

• Next, they do indeed suck up water with a thoroughness and insatiability almost beyond belief.

• Third, they're allelopaths, meaning they produce growth-inhibiting chemicals that discourage many plant species.

We'll summarize here, then report the nitty gritty in the next few articles.

Some trees are more ruthless than others in what they take from a bed. In this collection of various trees' and shrubs' root ends we unearthed in a garden one day, which one is the most densely clad in absorbent root tips -- the Norway maple (far right, arrow).

In its rooting habits, Norway maple has a lot in common with another invasive Eurasian species, the buckthorn (*Rhamnus cathartica*).

In most trees the prime water collectors are the fine, branched tips concentrated at the end of the root. Over time, main roots become thick and woody and in those older segments do not absorb much directly but simply transport what the tips collect.

In most species, the older and thicker a root segment becomes, the less likely it is to produce any hair roots. Buckthorn and Norway maples are two exceptions.

Left: Here's a buckthorn with root system. All the soil's been washed off -- the dark center of the ball is not soil. It's massed root tips. *Like the Norway maple, it's so efficient at using water that it readily develops root tips even from its oldest, thickest roots near the trunk.*

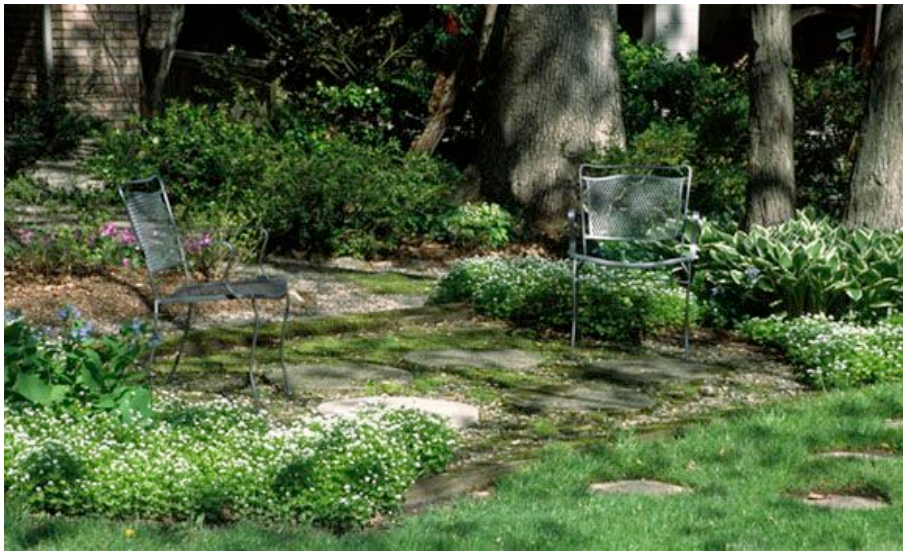
Our answers to each of that greedy maple's ploys:
1) Prune and keep pruning a maple to elevate and thin the crown. Plants need light or they have no energy to establish quickly, and photosynthesize so slowly that they can't draw up water even if it's available.

2) Water slowly and copiously every day. Let it run slowly and continuously, or water every morning, all morning. No way can shady perennials compete with a tree during peak hours in the afternoon, when water literally runs up the tree, drawn by evaporation. Start watering early in spring before the maples flower, spot watering emerging perennials. Do not tolerate any weeds, not one. Even the tiny ones are killer competitors for scarce moisture.

3) Choose plants as best you can. It sounds like you did well, honestly. There is no scientifically sound list to help in this regard, telling what does and doesn't grow well with Norway maples. (There are such lists for black walnut (*Juglans nigra*), the head honcho of allelopaths -- plants that are plant killers. Walnuts are native in agricultural fields. Their relationship to crop plants is important and well documented. Norway maples inhibit and kill plants in landscapes, a situation that does not earn so many research dollars.)

Grow what you chose. Then cull the herd, propagate those that thrive, trial more species and so on until you have 8 or 10 winners.

Last word of summary:
Never expect a shade bed to look like a sun garden. In the woods under maples there is less diversity than in a garden. Only a half dozen species may be there, but each will be thriving and covering large areas. Scattered about will be what appear to be bare spaces, but these are actually fully occupied by tree parts below or especially dense foliage above. That space is already at carrying capacity, so fill those necessary voids as below, with paths, stone, artsy fallen logs, a bigger bird bath, etc.



In the department,
This week in our gardens
Essential shade garden: Three keys to success
What seemed like a failure is the best kind of start

While we worked out our reply to poet gardener Frank Harney's review of a failed shade bed we came up with this analysis of successful shade gardening. Three things matter:

- Overcoming low light
- Alleviating water shortage
- Creating a plant mix that has the fewest inter-species antagonisms

When your shade garden doesn't seem to be working out, it's very helpful to take a walk through others' shady spots. Cleveland Botanical Garden's shady area is one of our favorites. It's a garden in a woods, and as in natural woods there is less diversity there than in a sunny garden. However, the species there are all thriving and covering large areas.

Making more light under trees

Trees are light hogs.
They can spare some for your garden
Overcoming low light,
Alleviating water shortage, and
Finding a plant mix with the fewest inter-species antagonisms.

These are the keys to growing well under trees.

Right: In shade, pruning is never done. We can't reach the oak and hackberry that rise above this mulberry. That calls for professionals in climbing gear or bucket trucks. However, we can reach the mulberry. It's fast growing so must be clipped every year or the naturally weeping branches descend so far they block the low angle afternoon sun -- the only light our garden has. Here, volunteer Adopt-a-Gardeners Phil Gigliotti and Ward Varns use pole pruners to do the job.

In shade, we always think about the light, first.
You must wrest some light energy from the tree(s), which will otherwise monopolize every sunbeam. Your garden plants need light or they have no energy to grow. Plants in low light also photosynthesize very slowly so that they don't draw up much water even if it's available. (It's the loss of water through the leaves -- loss to evaporation and to breakdown during photosynthesis -- that creates the vacuum that pulls water into the roots and up the stems.)
Start by pruning to elevate the tree and thin the canopy.

Right: The objective is "high shade" -- trees that have no branches within 15 or 20 feet of the ground.

Elevating and thinning is best begun when the tree is young, then touched up throughout its life. Then there are no huge wounds that leave the tree weak during the years that pass before they close over. Yet it can be done later in a plant's life without causing unsafe situations or compromising the tree's health. A well trained arborist is the key.

Unless your trees are saplings or miniatures, pruning must involve an arborist. Shop around. Choose certified tree care people who've invested the time in learning scientific, safe methods. Ask for and check references from people who've had work done by that person, crew or company over several years. (For more about selecting an aborist, *What's Coming Up #142 and the Society of Arboriculture website.)*
http://www.gardenatoz.com/what%27s-up!/ensemble-weekly-editions/spring/what%27s-up-142-nonblooming-bulbs,-pruning-japanese-maple/
http://www.isa-arbor.com/certification/verifyCredential/index.aspx

Plan to prune again every 3 to 5 years.
More often if the trees are very fast growing species.
Remove unnecessary shrubs and small trees. Gardening under a single layer of light-straining branches is a challenge. Trying to grow in the dim light left after sun's filtered by two or three layers is much more difficult.
Increase light through ingenious design

Finagle and recycle light, too.
Replace solid fencing with materials that admit light. Paint essential solid surfaces white, or cover them with crinkled aluminum or place mirrors at the back of the garden so available light bounces back through the area. Don't amplify afternoon sunbeams this way because those can burn on redirect.

*We had an arborist elevate the big maple in this yard, then we used fencing with openings and light-reflective paint, and we planted, watered and waited. It's far more shady than the photos suggest -- this and the next picture were taken in late afternoon when light does reach in for two hours. Otherwise the yard is shaded by the building or the maple all day. The shrub is a leatherleaf viburnum (*V. x rhytidophylloides *'Alleghany'). Japanese painted fern (*Athyrium japonicum *'Pictum') fared well at its feet. Turn the page to see it four growing seasons later.*

Be flexible in placing plants
Recognize subtle variations in light level. Buy several small pots of each new perennial and place each one in a different situation, because what fails in one spot may succeed just five feet away. Start small so you will more quickly see which plants are increasing or dwindling, then move them all to the best location.

Right: This viburnum "took" where we placed it. We would have moved it if it didn't look like it was heading in that direction. It was small to begin with,so we could see and feel confident in its growth. If we had doubts, we would have moved it in year 2 or 3.

In the department, ***This week in our gardens***

Shade gardening: Wringing water out of trees

It's a ruthless battle in which the most leaves wins

Water a shade garden, you water a tree. Best to learn how much water the tree will take and how to be sure your garden gets its share. For instance, did you know that big flare roots, such as the visible sections of white pine roots (bared in an interesting project we can tell you about another time) are not themselves very effective at absorbing water? As they grew they gave up that duty and now serve as transport channels for the water collected out beyond the branch ends. There, water gathering's done by young, opportunistically produced root tips.

• Overcoming low light,
• Alleviating water shortage, and
• Mediating inter-species antagonisms,
These are the keys to growing a good garden under trees.
Water shortage is not the top item but it is critical. Here are the sub-topics in this article -- what we know about water use by trees and how you can wrangle a fair share for the garden plants.

• Recognize big tree root zones
• Accept that there is an ungodly amount of water, going up
• So you can water a lot, still not enough!
• Useless to cut established tree roots
• Exceptional root pruning
• Summary of watering recommendations
• Case study, under two maples

Below, left: An explosion of roots at the tip is typical of many tree species. We took this root cutting from the slightly depressed trench at the edge of an irrigated garden, where water tends to accumulate. The root grew modestly branched tips until it reached that trench. There, the presence of extra moisture enabled this extravagant growth.

Recognize big tree root zones
We'll use the Norway maple from the site on page 7 to describe tree root zones and water use. It's the tree just outside the bed's west edge.

The tree has a 40' branch spread, but a root zone perhaps 100' across. That's a conservative estimate; roots extend 1.5 to 2 times farther than branches, or more.

An ungodly amount of water, going up
The U.S. Environmental Protection Agency has calculated that a tree absorbs a bit more than a third of any rain that falls on its root zone. It may take every drop of a gentle rainfall, less of a downpour.
http://www.epa.gov/heatisld/resources/pdf/TreesandVegCompendium.pdf

So consider a one-inch shower that falls on our 40' maple's territory. It amounts to 4,900 gallons and the tree can very quickly draw in 1,700 gallons. It can do that day after day. At that rate, from the 240 square feet of bed shown in this picture, the underlying roots can accept 50-60 gallons at a pop.

In addition, there's a silver maple just south of the bed, almost certainly drawing from that same plot.

Left: Some species' roots are more opportunistic than others. Here are two roots, a silver maple root on the left growing into the bed and a magnolia root on the right growing out (arrows indicate direction of growth). We exposed and photographed just where they grew, at the edge of the magnolia's bed. Both have been cut before (at the top edge of the cardboard backing) as we maintained the bed edge. Notice how both branched at that point, but many more roots developed from the cuts to the maple root, than on the magnolia root. Also, notice how the maple has produced new root tips even from older wood. The maple's the more serious competitor -- bet on it!

Water a lot, still not enough!
Now, lay out a generous irrigation system of 50 or 60 trickle emitters, each releasing between 1/4 and 1 gallon per hour -- 15 to 60 gallons of water oozes onto the bed in an hour. Given the trees' appetites, the system must run for several hours a day or its whole output is going to the trees.

Again, that's a conservative estimate. We know from personal observation that one 3/4" diameter root of an elm that slipped over the liner of our 8' x 10' pond was lowering the pond 2-3" per day -- that's 50 gallons. One root. Tree roots in the bed under this Norway maple tree will have gone into high gear in terms of growth, simply because the garden was watered. Each root will have produced a greater number of ephemeral hair roots to make the most of the bounty.

Useless to cut established tree roots
While you havea picture in mind of the root-load in this area, you should be able to see why cutting tree roots is not an effective way to gain more water for other plants in an area. If you cut a 3/4" root that was extended to the far edge of the root zone, branched and producing most of its hair roots there, it will now branch from the cut, within the bed. Growing on the energy provided by hundreds of thousands of leaves, it will outpace the growth of any garden plant root.

Stimulated to branch repeatedly within a relatively moist bed, a root once cut may never grow back out to forage far fields but stay put, increasing the overall drain on the bed's moisture.

So, if a tree root is in your way as you dig or plant in a shady garden, spread your perennial's or annual's roots over it, or shift to plant next to the root. Don't cut it.

All of the roots in the collection shown on page 8 were cut and then grew new tips. They each grew at a speed and in a pattern determined by their species' genes, but they all grew. That's the important thing to remember.

Below is a Parrotia *tree root, cut six months before the photo was taken as part of root pruning the tree to prepare it to move. Also shown, the tree's growth rate during that interval. You can see that many new root tips have developed from the cut. We can see that the branch growth rate is normal for the tree. So we know the tree is responding well to the treatment and staying healthy.*

Exceptional root pruning
The one exception, the time when root pruning can make a difference, is root pruning if the tree is young when you start and if you also prune that tree regularly to stay small.

Cutting roots without limiting the crown, too, is a losing battle. More leaves simply make more roots and increase the pull that moves water from soil into roots.

So keep that young tree's roots out of an area by drawing a line early on and trenching along that line annually. Also limit the tree's leaf surface with regular pruning.

There is more about root pruning in *Growing Concerns* 640.
http://www.gardenatoz.com/what%27s-up!/ensemble-weekly-editions/fall/grow-640-store-tender-plants,-mulch,-slugs,-fertilizer,-lawn,-lights/ - root prune

Third and fourth dimension answers: Expanding root space, and respecting important times
Use a very finely shredded bark mulch or compost in a shady garden, and renew it in fall. Don't wait until spring. Plants adapted to shade take advantage of a solar window to grow very early in the year. They root into last year's leaf litter, drying it and making it their own because it's then unattractive to tree roots. This all happens before tree roots begin vigorous growth each year, as the leaf buds open.

Weed in fall and don't allow a single weed to remain, especially near garden plants' crowns. Even tiny weeds are big water users and fierce competitors when they grow in close.

Summary of recommendations
• Water slowly and copiously every day. Let it trickle 'round the clock, or water every morning, all morning. No way can shady perennials compete with a tree during peak hours in the afternoon, when water literally runs up the tree, drawn by evaporation.

• Start watering early in spring before the maples flower, spot watering emerging perennials.

• Do not tolerate any weeds, not one. Even the tiny ones are killer competitors for scarce moisture.

Case study, under two maples
Left and below: The garden in our case study. Between the photos, two tree prunings, many changes in watering and almost three growing seasons have passed. (The shade remains unchanged, contrary to the effect created by different camera angle. The left hand image was taken looking east in the morning, the other looking west at 4 in the afternoon when sun reaches in for about 90 minutes.)

We planted this backyard garden under a big silver maple and a younger red maple. (Younger means growing faster and sometimes using more than its average share of water.) We helped the owner learn how to care for the garden, stopping by when there were problems. We traced most trouble to drought stress -- mildew prone plants succumb to mildew when dry; blooms abort; leaves discolor. At almost every turn, we prescribed more water.

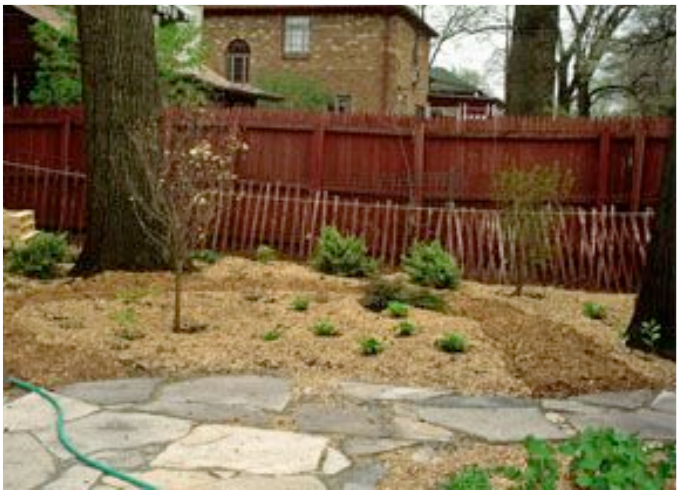
We knew we were making headway when, by the end of the first summer, each of the owner's calls to us began, "First, I have the water turned on. Second..."

The following spring we installed a system of weeper hoses and

convinced the owner to use the provided pressure regulator (most people don't understand the purpose of the funny washer with a tiny opening), fill the hoses in spring, then turn them down to the barest trickle and simply leave them on all summer. Then the garden "took." He kept a record and told us he didn't use much more water that year than when he had been throwing it around in the air.

Often, we waste a lot of water to wind and evaporation, and also in run-off when we apply it too rapidly.

Below: In this garden, too, trees dominate: One Norway maple, two huge oaks and three birch trees grow in one city back yard. Soaker hoses left on almost continuously did the job. Two summers passed between the images, with overhead watering in play the first year, soakers in year two.




Choosing shady plants

Think thrive, not survive

In *Failures Tell Tales* on page7, the gardener was frustrated to have had only 2 or 3 of 20 or more species "take" in his new shady garden. He saw it as a dismal plant success rate. However, we're not surprised. In fact, we think 2 or 3 self-selected thrivers is a great start. The trick is to use more of those and keep trying others.

We're not being flippant - we know that losing plants puts the hurt on a gardener, spiritually if not economically. What we write here is what works.

It's what we've done since 1995 in 1,000 square feet of our big Adopt-A-Garden perennial area at the Detroit Zoo. It's all fast-draining, alkaline sandy soil under mulberries and oaks, with no irrigation system other than one beleaguered volunteer per week, given a hose and bucket and charged to try to "keep the new things and annuals going."

In that space we began with about 50 species...
...and after a few years settled on 8 that stood the test...
...tried another 20 over several more years, netting 3 more winners. We play all winners to their limit.


That plant selection process summarizes this way:
• Choose plants as best you can. Use books, surf the Internet, take a walk at a wooded nature center and use a wildflower guide. As you search, avoid plants said to "tolerate shade." We don't want tolerant plants, we want exuberant players - shade lovers.

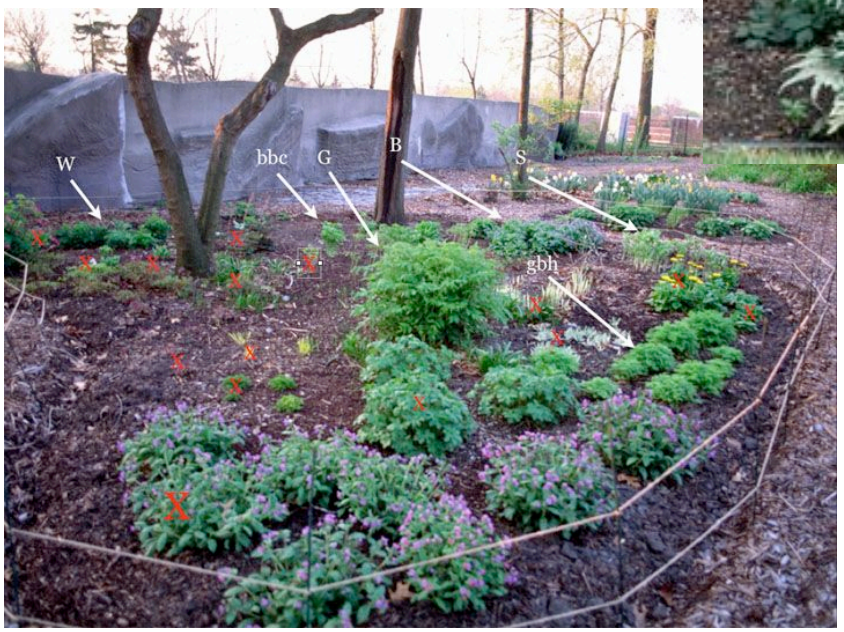
• Give the garden a year or three. Then cull the first herd, propagating those that thrived so they can cover more ground. Trial more species and so on until you have 8 or 10 winners.

• Never expect it to look like a sun garden. In the woods a bare handful of species may thrive under trees. Scattered about will be what appear to be bare spaces. These are actually fully occupied by tree parts under and below -- the land is at carrying capacity. Fill these necessary voids with paths, stone, artsy fallen logs, a bigger bird bath.

Our winners may not be yours, or right for your next garden
Rejoice in every perennial that signs on for the long haul in a shady garden. However, don't expect it to transfer to every other shade garden. You may move it into the same light situation (same number of hours and times of day) but the soil type is a bit different, so that it has occasional damp roots, or too little of a given nutrient, and it struggles. The trees above it may be a different species, with roots formed differently or exuding a different chemical cocktail. We don't get frustrated over this. It's a living, immortal jigsaw puzzle.

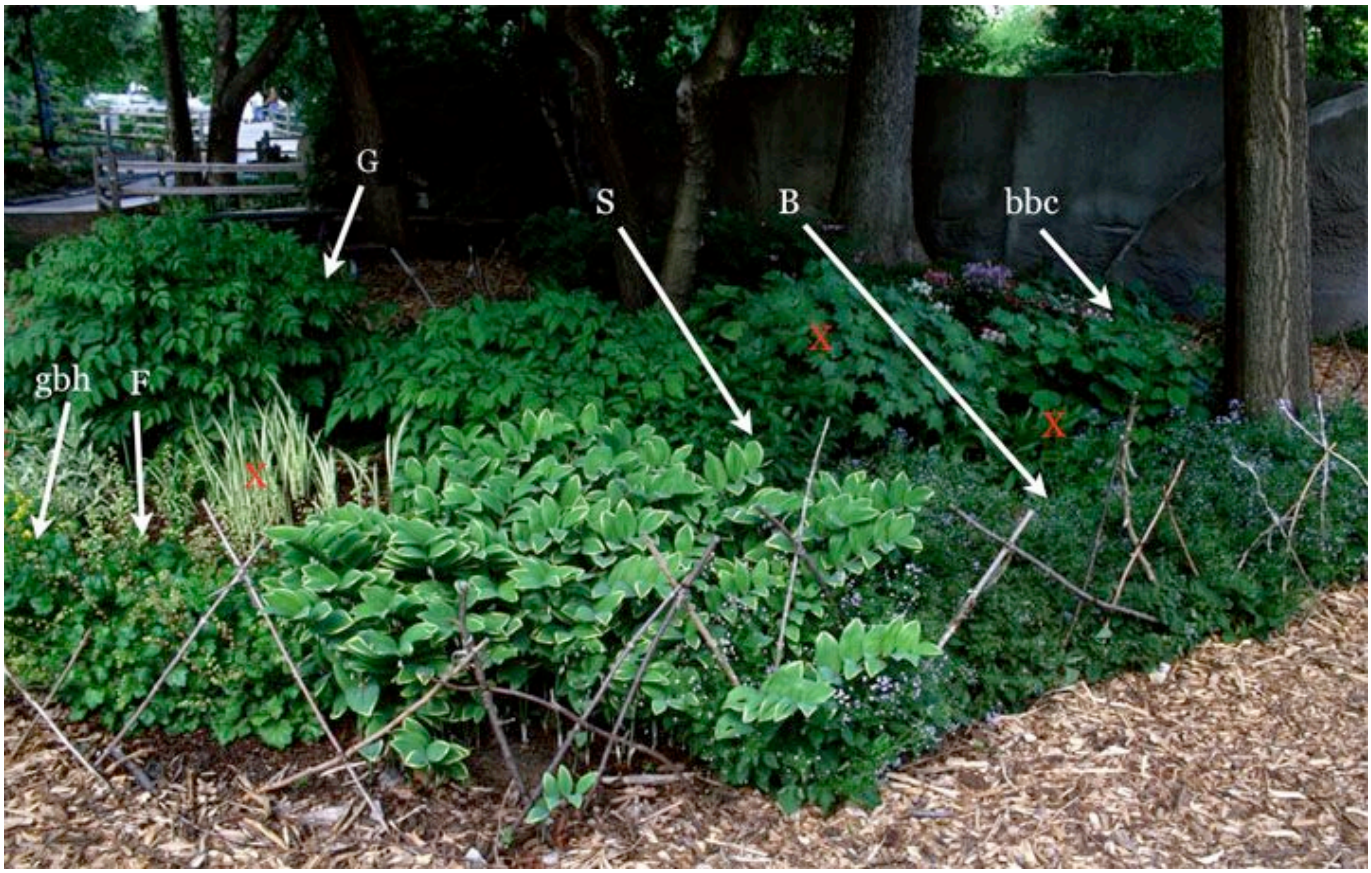
*Even ferns have specific favorite places. Japanese painted fern (*Athyrium japonicum *'Pictum) is normally on our list for performing well in dry shade and heat. Yet it has not thrived in the garden we've used as an example for this article. Why? Maybe one day we'll identify the critical element that's missing in this environment, or maybe it will remain a mystery. Either way, we love the plant!*

That said, the most successful perennials so far in the dry, shady Z6 bed we've described to you, have been:



1) Big leaf forget me not (*Brunnera macrophylla*)
2) Blue bush clematis (*C. heracleifolia davidiana*)
3) Dwarf blue hosta (*Hosta* 'Blue Cadet')
4) Fringecups (*Tellima grandiflora*)
5) Goatsbeard (*Aruncus dioicus*)
6) Golden bleeding heart (*Corydalis lutea*)
7) Variegated sweet Solomon's seal (*Polygonatum odoratum* 'Variegatum')
8) Wood poppy (*Stylophorum diphyllum*)
9) Yellow lamium (*Lamium maculatum* 'Aureum')

Above, and on the next page: Our self-selecters, when they were just planted and a few years later when it was obvious which had prospered. B, bigleaf forget me not; bbc - blue bush clematis; G - goatsbeard; gbh - golden bleeding heart; S - sweet Solomon's seal; W - woody poppy.) We removed those that had waned or only held their own (red x's). Although there are a lot of red x's we don't let that get us down. Overall, the garden's thriving so we're happy, too.



B, bigleaf forget me not; bbc - blue bush clematis; G - goatsbeard; gbh - golden bleeding heart; S - sweet Solomon's seal; W - woody poppy

*Above: Bigleaf forget me not (*Brunnera macrophylla*); this variety is 'Variegata'*

*Left: Blue bush clematis (*C. heracleifolia davidiana*)*

*Far left: Fringecups (*Tellima grandiflora*)*

*Left: Golden bleeding heart (*Corydalis lutea*)*

*Below, blooming white and tall: Goatsbeard (*Aruncus dioicus*)*

"Best Plants" line-up continues on page 20

This article on choosing shady plants was Sponsored by

- Heidi Lujan - In loving memory of my mom, Bonnie Lujan.

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*Left: Wood poppy (*Stylophorum diphyllum*)*
*Above: Yellow lamium (*Lamium maculatum *'Aureum') Shown here in the sun where we never expected it to do so well. We thought it would scorch. We knew it would grow faster than in the shade but the reality was shocking -- this was a 12" x 12" division three months before this photo was taken. We'll be taking it out and putting the pieces back into the shade where it's more sedate.*

Plus 17 new topics in the library, ***Ensemble Weekly Editions***

We move recent news into the *Ensemble* as the seasons change. We also add to this **season-based library** from our own archives. This week, we've posted these issues and articles:

Growing Concerns 640 with 11 articles on topics from storing tender plants to late fall lawn care, root pruning and holiday lights. Read it at:
http://www.gardenatoz.com/what%27s-up!/ensemble-weekly-editions/fall/grow-640-store-tender-plants,-mulch,-slugs,-fertilizer,-lawn,-lights/

Growing Concerns 594 covers citrus tree problems, browned-out arborvitae and holiday lighting in the garden. Read it at:
http://www.gardenatoz.com/what%27s-up!/ensemble-weekly-editions/late-fall/grow-594-lemon-tree,-arborvitae,-holiday-lights/

Growing Concerns 575 props up *Hydrangea*s, prescribes ground cover for sunny dry beds, and walks you through pinching pointers. Read it at:
http://www.gardenatoz.com/what%27s-up!/ensemble-weekly-editions/early-summer/grow-575-hydrangea,-ground-cover,-pinching/

So now there are **more than 900 articles** in the Ensemble weekly Editions.
You can read what you need by choosing a season and scanning key words from titles. Or you can do a Search by your own keywords, better than any index! For instance, if you're intrigued by the shade loving *Corydalis* called golden bleeding heart featured in *What's Coming Up* 191, type its name into the Search field (677 pages searched in 0.422 seconds!) to jump to two more articles that describe it.
Some of these additions to the library have been made available to you through the generosity of Sponsors who requested a particular issue or topic. On that article you'll see the Sponsor's name, often with a message or their chosen photo. It's easy to Sponsor us and we hope you will help us in that way, too.
You can Sponsor, too. Please do. This winter we can more than double the library's content -- we have that much and more in queue. All we need is your support to put in the time it will take to format and load them.
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