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The Right Native Plants in the Right Landscape Means Fewer Allergies

By Tom Ogren



Pollen. Our world would grind to a halt very quickly if pollen stopped blowing around, and if pollinators (such as the bee in this photo) no longer transported the pollen from one plant to another. We need pollen. Where things go bad is when commercial manipulation of certain plants, especially trees in urban areas, causes over-exposure to pollen and mold spores in the human population, resulting in increases in allergy-suffering and possibly even heart disease, autism, pneumonia, and reflux disease.

Recently Rebecca Gale-Gonzales, president of the Flint River (MI) Chapter, brought to our attention an article in a West Coast newspaper that listed allergenic plants to avoid in one's landscape. Since most of the listed plants are native to one part or another of the United States, she was concerned that this might cause people to avoid planting natives in their landscapes. We pursued the subject with Tom Ogren, an expert in allergy-free gardening, who explained the source of the problem.

Many of our most allergenic plants commonly used in landscaping in the United States and Canada are indeed natives. However, it is the manipulation of these plants by commercial horticulture that has, and is, causing most of the huge increases we are now experiencing with allergy problems.

Thirty years ago fewer than 10 percent of Americans had allergies. The official figure today is that a whopping 38 percent of us now suffer from allergies. (December 1999, American College of Asthma, Allergy, and Immunology.)

Not too many years ago death from asthma was fairly rare. Today it is all too common, and is considered epidemic. Asthma has now become the number one chronic childhood disease in America.

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Furthermore, there is new data coming in recently that shows a strong connection between over-exposure to pollen and/or mold spores and increases in other diseases such as heart disease, autism, pneumonia, and reflux disease.

American Elms

The landscape tree in most of America for many years was the tall, stately American elm. The American elm used to grace the streets of thousands of towns and cities, and when Dutch elm disease started to spread and kill off these native elms, the insect-pollinated, perfect-flowered elms were most often replaced with wind-pollinated, unisexual-flowered, street trees.

Many things happened because of the big switch from the elms to these other tree species. First, the elm flowers had a rich nectar source, and since these trees bloomed very early in the season, at a time when insect food sources were severely limited, urban honeybees and butterflies depended on this food source.

Since the majority of the street trees used to replace the elms were wind-pollinated, they often lacked these nectaries, and supplied no early-season food source. Soon we started to see a rapid decline in the total numbers of urban honeybees and butterflies. There were other factors as well behind this decline, pollution, insecticides, and disease – but the loss of the crucial early-season food sources should not be underestimated.

Dutch elm disease spread mostly from east to west across the U.S., and so has the rise in allergy rates. You can actually track the spread of allergy from the decline of the elms.

The American elms, (*Ulmus americana*), did cause a certain amount of low-level, early-spring allergy, simply because they were so very common. The over-planting of elms resulted in a lack of biodiversity, and set the stage for the massive kill from the Dutch elm disease. We now know that it is always a mistake to use a monoculture, to plant too much of just one species. Diversity is always a good idea in horticulture.

Diversity

Biodiversity is the way to go when we are creating landscapes that will limit allergenic exposure. Almost any

species of plants can eventually cause allergies if it is over-planted enough. All too often in the urban landscapes of today we see that landscapers have used the same old plants over and over again. This overly simplistic approach to landscaping results in landscapes that lack originality, and produce a numbing “sameness” in far too much of our urbanscape. When residential houses are professionally landscaped with the exact same plant materials used to landscape banks, real estate offices, and dentist’s offices, we all lose.

Allergy rates today are far worse in urban areas than they are out in the country. Pollen allergies are worse in cities than in the country, despite the fact that there is much more total green matter in the countryside than in the city. Plant selection has been the main problem.

Natives and Urban Landscapes

There are many native trees and shrubs used in our landscapes. Maples, oaks, locusts, poplars, willows, catalpas, birch, junipers, and many more native species are extensively used. Unfortunately the plant breeders and propagators discovered how to “sex-out” the trees and shrubs. They learned to use only male plants, ironically, as “mother plants,” as the source for their scion wood for asexual propagation. First they just used male plants from the dioecious (separate-sexed) species, but later they learned how to produce all-male clones from species that in nature were never unisexual (the monoecious species).

For example, honey locust trees, (*Gleditsia triacanthos*) are native to our Southeastern U.S. Look at these trees in the wild and you will see that all of them are almost always covered with long seed-

pod. But go to a nursery now and look at the honey locust trees for sale. The ones on sale now are called “seedless,” and they are in effect, all-male clones.

What exactly is the effect of using all male cloned trees and shrubs in our landscapes? Very simply, this translates to an excess of allergenic pollen. Only male flowers produce this airborne pollen. Unisexual female flowers produce no pollen.

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The stately American elm (*Ulmus americana*) once graced the streets of thousands of towns and cities. Unfortunately, when Dutch elm disease wiped out most of these trees, they were replaced by wind-pollinated, unisexual-flowered street trees.

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Why the Emphasis on Male Plants?

Horticulturists knew that female plants produced seeds, seedpods, and fruit. This “litter” fell on the sidewalks and created a “mess.” By using only asexually (no sex involved) propagated cultivars (cultivated varieties), they were able to create “litter-free” landscapes. These required less maintenance, and were (and still are), very popular with city arborists and the public. In the U.S. today, four of five of the top-selling street-tree cultivars are male clones.

Female flowers (pistillate) on female trees or shrubs produce an electrical (-) current. Their stigmas are broad and sticky. Airborne pollen from male plants has a negative electrical impulse before release, and a positive charge after release – and this pollen is light and dry. Because of the + and – electrical charges, the pollen and the stigmas are drawn to each other. They are mutually attractive. Mother Nature saw to it that pollen would land, and stick, exactly where it was needed. Female plants are nature’s pollen traps, our natural air cleaners.

Today though, most of the female plants are long gone from our landscapes. The pollen from the males floats about, seeking a moist, sticky, positive-charged target. We humans emit a positive electrical charge, and our mucus membranes, our eyes, skin, and especially the linings of our nose and throat, now trap this wayward pollen. We have become the targets.

Unhealthy trees create mold spores

One of the bigger allergy problems comes from production, by molds, of tiny airborne reproductive spores. These spores are usually much smaller even than pollen grains, and like pollen they cause allergies.

Plants, trees especially, that are not healthy will almost always be attacked by any number of pests, especially by insects such as aphids, scale, mealy bugs, and white fly. These insects suck the vital plant juices weakening the tree further. Feces secreted by these insects is commonly called “honeydew,” and this honeydew is very nutrient rich. Almost immediately mold will grow on this fertile substance, and quickly the mold will start to reproduce itself with its billions of tiny spores.

If you look up at a tree, and the leaves look dirty, this is almost always because they are indeed filthy and they’re covered with insects and mold. Often a tree like this will be producing incredible amounts of mold spores for many months on end. In a mild southern climate this mold formation can go on year round. Essentially, having a tree like this on your property is much like having a giant mushroom there that continually showers everyone nearby with allergenic spores.

Why are these trees sickly?

There are many reasons why a tree fails to thrive. The insects on the tree are not really the cause, they’re just a reflection of a more fundamental problem. Usually a tree is unhealthy because it is not the best tree for that particular spot. This is where natives play such an important role. A tree that is native to an area will be much more likely to thrive there.

In the July/August 2000 issue of the *Wild Ones Journal* there was an excellent article by Andy Wasowski on “Provenance.” He explored the concept that being truly native means being endemic to one particular geographic area. For example, just because black ash (*Fraxinus nigra*) is native to the United States does not mean that it would thrive in Southern California. Black ash is endemic to areas of the U.S. where the winters are cold and long, the soil is acidic, and the water table is high. Black ash might well thrive in a cold, damp landscape in northern Minnesota, but it would not do well in hot, dry, alkaline Los Angeles.

The problem though is that a black ash, because it is inherently a tough, sturdy tree, might grow if planted in a place like Los Angeles. It might even grow to become a fairly large tree, but it would never be a very healthy one. And thus, this tree, out of place, not in an area very similar to where it originated, will almost certainly become a mold-spore factory, an allergy tree.

We often want to grow plants that are not well suited to our areas. We are forever planting trees that we like, in areas where they will not thrive. Rarely do we think it all out, years into the future, and consider the unhealthy ramifications of this process.

Corruption of the Natives

This whole business of tidy landscapes has gotten out of control. Our desire to manipulate nature is starting to backfire on us. The all-too-common blending of use of natives, and asexual manipulation of their sexes for the purpose of low-maintenance plantings, is quickly becoming a very unhealthy situation.

A few years ago I was out in a neighborhood near mine, here in San Luis Obispo, California. I had my camera in hand, and needed some close-up photos of male groundsel bush, coyote bush (*Baccharis pilularis*). I was standing on the public sidewalk, taking shots with my macro lens, when an older fellow walked out of the house and asked me, “What in the world could be worth photographing in my front yard?”

I explained that I was an allergy researcher, and needed photos of male coyote bush in bloom.

“Something wrong with them?” he asked me.

“They’re all male,” I said, “and they are close relatives to ragweed. Your whole front yard is covered with this stuff.”

“Humm,” he said, frowning.

“Actually, sir,” I said, “all your groundcover is male. That entire row of junipers there on the side of the house, they’re all males too. Notice that none of them have any juniper berries?”

“Un-huh,” he said.

“This ash tree in your yard, too, there’s no seeds on it either. Ash always makes seeds if it’s a female tree, but this one too is a male. They’re an olive relative, and the pollen of the males is quite allergenic.”

I looked over his entire landscape. “Actually,” I said, “everything in your yard is highly allergenic, everything except for that climbing rosebush on your porch.”

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"Figures," he said.

"So," I asked, "does anyone here have allergies?"

"Sure," he told me, "my wife does. She's got terrible allergies."

"I'd be willing to bet she's having them right now," I said.

"Yep," he said, "she's been sick for several weeks now."

Now, when I think of that particular landscape, the use of manipulated natives is quite interesting. The groundsel bush ground cover is native to California, and endemic to this same coastal region. The juniper growing alongside the house was also a thriving native species, and even the large ash tree in the yard was a California native. But the ground cover had all been grown from cuttings from dioecious male plants. The ash tree, originally a seedling, had been grafted or budded with scion wood from a "seedless" male tree, and the junipers too, had been originally propagated by cuttings, using only wood from male plants. In this above case the landscape was high in natives, but it was not in the least bit natural.

Natural Resource Management

Recently I have started to think of my work as closely involving natural-resource management. I am trying to get us back to landscapes that are natural, that are diverse, that use plants that will thrive, and that use a blend of plants that are sexually balanced. In nature we never find landscapes composed of just one sex; there is a sexual equilibrium.

The resource we are managing is the very air we breathe. Excessive pollen or mold spores are pollutants, bio-pollutants perhaps, but toxic, allergenic, asthma-causing, respiratory-clogging pollutants nonetheless. Clean fresh air is a resource well worth our consideration.

And finally, management. For too long now our urban landscapes have been managed with little or no regard to their effect on the health of those people living in these landscapes. It is time now to start actively managing our landscapes. Now is the time to take control and to get back to a more natural state.

Your Own Yard

For many years no one paid much attention to the idea of allergy-free gardening because as they said, "pollen blows." It was often claimed that you could go 100 miles out to sea in a ship, and there you could set up a pollen trap, and you would catch pollen. Obviously there are no trees

growing out there.

This old idea about pollen dispersal was partly right but mostly wrong. Dead wrong. Yes, you could trap some pollen way out there in the ocean, but the pollen of most species would never reach anywhere close to your ship.

In 1972 a clever meteorologist from New York, Gilbert Raynor, set up an experiment. He put pollen traps at close intervals starting right next to a large, pure stand of Timothy grass being grown for hay. Timothy (*Phleum spp.*) pollen is known to be especially light and buoyant. The very sort of pollen you might expect to trap far out at sea.

At a mile from the field, Raynor was able to trap some Timothy pollen, however at a half mile from the field he found that more than 99 percent of all the pollen had already fallen out and stuck. Closest to the field he found the greatest concentration of pollen.

What exactly does this mean? Quite simply it means that there is such a thing as the law of gravity, even with pollen. In my own pollen-dispersal testing I have consistently found that with most trees the largest majority of the pollen falls out and lands within 30 feet of the drip line of the pollen-producing tree. The closer you are to the allergy tree, the more pollen you get.

Allergy develops from repeated over-exposure to the same allergens. If your own yard is full of pollen-pumping trees and shrubs, you and your family are the ones who will be exposed the most. If

the schoolyard where your small children play is surrounded by shade trees that are all male cloned cultivars, your children will be the ones most affected.

Not long ago I saw some pollen counts, taken 4 feet off the ground (at face-level), from a playground at an elementary school. Counts of single-species tree pollen there were exceeding 60,000 grains per cubic yard of airspace. Every single child on that playground would have been inhaling an average of 2,000 to 3,000 grains of pollen with every single breath of air he or she took in.

Not surprisingly in the least, the entire playground was ringed with shade trees, and every one of them was a male cultivar.

I'd like to wrap up this article with an appeal to you, the reader. Change here is both important and long overdue. Pressure needs to be brought to bear on retail nurseries to start allergy-ranking the plants *Continued on page 5*



Nursery-bought honey locust (*Gleditsia triacanthos*) trees are commonly planted in cities now, and because most of them are all-male clones, they produce an excess of allergenic pollen.

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they sell to the public. Pressure needs to be applied to wholesale nurseries to get them to start growing more pollen-free female plants and fewer allergenic males ones. City tree committees need to get themselves informed about this, and smart choices must begin to take place. County and state landscape, transportation, and parks departments need to start doing their part. Horticulture- and landscape-design teachers ought to be teaching this material to their students.

City arborists are right at the heart of this matter. Arborists strongly influence almost all aspects of urban forestry and, more than any other group, understand trees from a practical perspective. Arborists are acutely aware of the multitude of cultural concerns in keeping city trees healthy, and they need to also be equally as aware of how the right trees can keep people healthy.

As allergy rates continue to shoot upward, and deaths from asthma increase ever more rapidly, the public will eventually demand that all new city trees planted are either allergy-free or are at least low-allergy selections. Arborists who understand this clearly can lead the change to these much healthier urban forests. Millions of people, children especially, will benefit from this switch.

I ask all of you to help me get the ball rolling here. Time is a-wasting. ♦

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WHO IS TOM OGREN?

Tom Ogren has an MS in Agriculture/Horticulture from Cal Poly, San Luis Obispo. His book, *Allergy-Free Gardening*, nominated by the Garden Writers of America, as the "Most important New Book of Year 2000," lists thousands of landscape plants, each with a numerical allergy ranking. He continues to do new research, writes, and gives numerous talks and seminars.

Tom's work has been published in, among others, *Garden Design*, *American Rose*, *Pacific Coast Nurseryman*, *Landscape Architecture*, *Colorado Nurseryman*, *California Landscaping*, *Garden Gate*, *Alternative Medicine*, *New Scientist*, *Earth Island Journal*, *Wild Ones Journal*, *ENN*, *E Magazine*, the *Journal of American Forestry*, the *Utne Reader*, *Second Wind* (magazine of the American Lung Association), the *Washington Post*, the *Boston Globe*, the *Chicago Tribune*, the *Seattle Tribune*, and the *London Times*.

Tom does consulting work for the USDA and the American Lung Association. His web site is at www.allergyfree-gardening.com.

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