

# Iowa Bonsai Association Newsletter

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## IBA April Activities

### **April 15, 9:00 AM, Open Study Group and Presentation at 11:30 AM**

*We'll be working on the Terrace, weather permitting.*

### **IBA Meetings at The Greater, Des Moines Botanical Garden. 909 Robert D. Ray Drive**

**Topics:** 11:30 Presentations: *Re-potting by Larry Totton and Formal Display by Dave Lowman. Open Study Group. We'll be working on the Terrace, weather permitting.*

## EIBA March Activities

### **April 13, 6:30 PM, EIBA Board Meeting at Panera Restaurant on Edgewood Road**

**Topics:** *Brucemore show replacement, April mtg agenda, club soil status.*

### **April 20, 7:00 PM, EIBA Club Meeting, Pierson Flower Shop on Ellis Blvd.**

**Topic:** *Pests and Diseases and Treatments by Al Pierson, Tree of the Month*

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**MABA holds the 2017 Convention in Indianapolis, see info on the top of Page 2.**

**Earth Day Spring Bonsai Exhibit, April 22nd & Sunday the 23rd.**

**At the Greater Des Moines Botanical Garden**

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## Todd Schlafer Comes to IBA

Susan Daufeldt

On April 1, 2017, members of the Iowa Bonsai Association and, by gracious invitation, members of the Eastern Iowa Bonsai Association, had the privilege

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of working with Bonsai artist, Todd Schlafer, at the Magruder's home. Todd is a student of Ryan Neil's and is from Denver, Colorado. He collects very fine conifers



Todd, hard at work on a Colorado blue spruce (*Picea pungens*), April 1, 2017.



in his decision to make bonsai his fulltime profession.



(From Left to Right) Bob (ponderosa pine), John Daufeldt (blue spruce) and Ivan Hanthorn (lodgepole pine).

*Todd Schlafer Comes to IBA - continued*

from the Colorado Rockies. IBA members had the privilege of working with Todd the previous year and came to the workshop ready to continue exciting work they began at that time. Todd opened the workshop by telling participants that the IBA had been instrumental

Before work began, Todd discussed the work to be done with each participant and everyone had the opportunity to listen and ask questions concerning the repotting process or styling contemplated for each tree. Thereafter, everyone settled down to work under Todd's direction. Tim Peterson and Ivan Hanthorn began with trees that were to be repotted. Todd had them working together on the repotting processes. Initially,

Ivan assisted Tim with his repotting and then Tim assisted Ivan. It was clear that a second pair of hands was extremely helpful and even necessary. Spray bottles full of water were kept on hand to keep the roots moist and wet towels were placed over and around the root balls when the trees were waiting to be positioned in the pots. In both cases the root ball was above the rim of the pot and Todd had an interesting way of using wire and unsifted sphagnum moss to make a sort of fence that held the soil in place.



*Scott Allen working on his Colorado blue spruce and Helene Magruder*



Scott Clark and Todd Schlafer working on Scott's blue spruce.

Scott Allen, Scott Clark and John Daufeldt had purchased trees from Todd and spent the day styling those trees (though Scott Allen later moved onto an



Scott Clark's blue spruce after styling.

interesting repotting). Scott Allen spent a lot of time perfecting his wiring technique. Scott Clark's new blue spruce had an unusual low branch that was brought down into a semi-cascade. This required cutting away the container to allow the branch to be bent down. John Daufeldt began work on his blue spruce by learning to create deadwood. Bob West had brought a ponderosa pine that had been repotted the previous year and spent much of the day styling that tree. new home for two or three years, possibly even longer.

It was a comfortable, instructive and thoroughly enjoyable day. The workshop continued on Sunday, April 2, 2017. Both days went long, ending after 6 pm. Thanks so much to the Magruders for allowing IBA to use Helene's workroom for this event. Thanks to Todd Schlafer for his valuable instruction and wonderful trees. Thanks, also, to those IBA members who donated their efforts to the administrative tasks that made this workshop possible.

Todd will return to Iowa to do a free program on Saturday, August 12, 2016, at the Greater Des Moines Botanical Garden ("GDMBG"). The program is a joint venture between IBA and the GDMBG.

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## Bonsai Tips

*John Denny*

Here are a couple of bonsai tips I learned recently.

### Sticky Fingers from Sap

When your fingers are sticky and dirty from the sap of conifers, take a little olive oil to the sink and rub some into your sap stained hands. Then wash your hands with soap and water. It works pretty darn well.

### Moss Growing Tip

It can be tough to grow good moss in Iowa. Here is a tip from Ryan Neil. First, shred some long fiber sphagnum moss between two soil sifting screens. Use a 1/4" screen to rub the moss over. Now take what passed through that screen (called the unders) and run the unders over a 1/8" screen (just shake it, do not rub the moss on this screen).

The really small fibers will fall through. Save what stays on top of the 1/8" screen.

Now, take some good moss that you have and chop it up fine. Then, mix it into the finely shredded sphagnum moss that you saved. Place this mixture on your soil surface and wet it with a sprayer. Do not cover 100% of your soil. It will take a while, but your live moss should be helped by the moisture retaining sphagnum moss. Keep the moss mixture damp and out of heavy wind and sun. Good luck!

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## **Earth Day Spring Bonsai Exhibit**

*John Denny*

The Greater Des Moines Botanical Garden is again hosting the Earth Day Spring Bonsai Exhibit, Saturday April 22nd & Sunday the 23rd. IBA and EIBA members may bring up to 5 trees at 9 AM Saturday. The exhibit space opens to the public at 10AM.

Our Earth Day hands-on participation activity this year will consist of several trees, on turntable stands, with signage inviting the public to find the side they prefer as a front. If you have a rotating stand with a tree you can stand to be rotated, please bring it this year.

There will be an extra space on the labels, for all other trees, for you to mention any special fact such as where it was obtained, pottery artist, fall color, other common names, horticultural challenge, etc.

Both days will end at 4PM. You may exhibit just Saturday if you must. Bring a bonsai project to work on if you can; visitors enjoy the action. Over a thousand people have been viewing these Earth Day Exhibits in recent years.

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## **Rocky Mountain Juniper Styling**

*John Denny*

Three years ago I bought a fairly cheap RMJ from Andy Smith at the Chicago show. The tree was repotted the following spring, replacing the soil with better volcanic rock soil. Since the repotting, my goal was to get it

strong, both the roots and shoots. See Photo 1.



The tree was inexpensive because it had limited design options. It had a long straight unmovable low branch on the right that made it seem the best option was a semi cascade. Looking at the tree, it was also possible to minimize or shorten the main branch, leave the tree upright and utilize the thinner and bendable branches in the top of the tree. However, I thought this option made the tree seem younger and less like an old, wild, collected tree. I wasn't fond of either option.

Todd Schlafer entered the picture. We took the tree inside to be styled if a good plan could be hatched. Todd angled the tree to look at the semi cascade possibility. The top of the tree leaned back a bit too far, so he blocked the tree up in back to bring the top forward. He thought this was the best angle to show the deadwood shari in front, the width of the trunk, and to be able to use the top branches to some effect. I wasn't completely sold. However, I trusted Todd and his experience working on collected trees, so I gave the go ahead to use this angulation. See Photo 2.



Next Todd worked on the shari, enlarging the area as there was more deadwood under the bark veneer. Next he selected a larger branch on the upper right area that he worked hard to bend down and into a position somewhat parallel to the main heavy low branch on the right. That made a nice improvement. Todd pruned those branches some to get the optimum length. Next, Todd selected a long branch high on the left side of the tree, wired it with copper and brought it down and down some more. The tree was getting more interesting.

Todd then found branches for the back and wired them into place. Before and after wiring each branch, Todd would squat low from a few feet back to look where he thought the branch should be moved. I can't tell you how many squats Todd did, but it was more exercise than I cared to do. He was very particular where each branch was placed. Finally, Todd began working on the smaller twigs and branches near the top of the tree. This took him a good bit of time to get things to his satisfaction. We both agreed we liked the tree a lot. It is such an improvement over the basic, simple tree we began with.

Todd built a simple wooden base to hold the pot and tree in this new angulated position for the summer and fall. Next spring, we will replot the tree. Roots in the high back left and low front right will have to be moved or removed. There is one larger root that may have to be shortened or worked to fit into an appropriate sized pot.



This tree did not have great design options and I think Todd came up with a great solution managing the strengths and weaknesses of the tree quite well. I look

forward to seeing this tree fill out over the summer and fall. I think the tree will be a very nice tree and will look great on the bonsai bench for a long time to come.

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## Plant Physiology and Your Bonsai Trees – An Overview

*John Denny*

Plant physiology scares off many people, but I hope you will read this anyway. I promise to keep it straight forward. And believe me, understanding the basics of plant physiology will make you better at bonsai and will make your trees stronger, healthier, develop faster, and look more beautiful. Not understanding the basics of plant science can cause the opposite to happen and no one wants that.

I do not purport to be a PhD in Plant Physiology. I will only share information that comes from the best sources (that eliminates my head as a source). There are two people I trust as sources of plant physiology and its impact on bonsai. Michael Hagedorn and Gary Wood. Hagedorn and Wood are both among the best bonsai teachers in America regarding the breadth of their knowledge. Most teachers do not know science the way they do and are not able to relate it to the health of our trees, nor to the reasoning behind the many bonsai techniques we use on our trees. Plus, in Michael's case, he has put much of his knowledge in print, so it is easy to reference for accuracy.

There are many variables in plant physiology, including sunlight, water, sugar, hormones, fertilizers, etc. We will talk about each one, then show how they are connected, and finally show how the various bonsai techniques we use impact those variables.

**Photosynthesis** is the process a plant uses to take CO<sub>2</sub> + water in the presence of sunlight and chlorophyll and created sugar + Oxygen. Some scientists claim this is the single most important chemical reaction on the planet. Plants have been described as “sugar junkies”, which we will get to later. If a tree is too shaded, it gets weaker, right? We all have seen it for ourselves. With less sugar created, the tree's roots and shoots get weaker and the tree

struggles to resist stresses – stresses like being in a pot, pests, diseases, heat, etc. Move that same tree back to adequate sunlight and it will begin to get stronger and healthier. Pines love sun. Deciduous trees like sun, but some species can get too much sun and do optimally better in partial sun. In pots, high sun environments often mean high heat, too, which can be hard on trees in pots, so take care not to over-do the amount of sunlight a tree gets. Each species has its own optimum.

**Water** is critical to all species of plants and animals. Bonsai are certainly dependent upon us to maintain the correct level of water in the soil for efficient uptake. Water is necessary in a bonsai tree for the fluid transfer of sugars, hormones, and other compounds. Transpiration through leaves creates pressure differences that pull water (and needed chemical compounds) up from roots to the leaves/needles. Live wood is about 55% water and foliage is about 85% water.

Water must be of good quality. Water that is too alkaline or too acidic can cause problems for your bonsai trees. Most plants want water with a pH of 6.0 to 6.5. Do you know what your water's pH is? Visit a tropical fish shop and buy a pH test kit. They are cheap and fairly accurate. The test is simple. Add a drop of the chemical to your little test tube of water. The water changes color to green or blue. Match the color against a card and you will be able to read the pH. If you need to adjust your water (adjust if above 7.5), look for a blog on Hagedorn's web site describing how to make those adjustments. If your pH is off, your tree will have problems with the uptake of certain minerals/fertilizers.

Water hardness is also important to water quality. The minerals don't just cause the unsightly white residue on your pots, but too much hardness can limit the growth of your bonsai trees. Pale and lackluster foliage will result. If your water hardness is too high (over 150 ppm), then you can use rain water or if you have enough trees, you might look into Reverse Osmosis

filtration to remove some of the excess minerals in your water.

We have all heard that learning to apply water to our trees is one of the hardest things to learn. Timing of the applications are important. Knowing your species water requirement is important. Knowing your soil components is important, too. If you have moss on the soil surface, watch to see if it is shriveled. Is the soil surface light in color and therefore dry? Stick your finger into the soil half an inch to feel for dampness. Some trees tolerate slight drying out, others do not. It is up to each of us to know our trees' water requirements. Do not just water all of your trees the same. Watch for water pooling on the surface. You may have a water problem needing attention at the soil level. Top dress. Also, pay attention to the wind, humidity, cloudiness, and temperatures to help determine if the day will require one or two waterings, or a watering and a later misting, or can today be a "skip day"?

**Hormones** help determine the shape and activity of your bonsai. We use bonsai techniques to alter the balance of hormones in order to get the plant to do what we want it to do so it can be a better, healthier bonsai. The two basic hormones in bonsai trees are "auxins" and "cytokinins". These two hormones work in opposition and also in harmony. Auxins are produced in shoot meristems. They are made in large quantities in the large end buds. Auxins travel from the shoot tips down the tree to the roots and stimulate root growth. On the way down from the branch tip, auxins also tell dormant buds to stay dormant and it inhibits the growth of secondary shoots. This allows the maximum of the sugars to go straight to the end buds, not the lateral shoots. If we cut the end bud, that reduces the auxin production. With less auxin traveling down the branch, the lateral shoots will grow a bit more and perhaps some dormant buds might pop. This activity along the branch will promote ramification.

Cytokinin is produced in the root tips and travels up the tree to stimulate lateral shoot growth, making the tree more mature looking. When the two hormones are in balance, shoot and root growth are in sync.

If the hormone balance favors auxin, you get root growth. If the hormone balance favors cytokinin, you get shoot growth. If we cut shoot tips, we create an imbalance favoring cytokinin and shoots, especially laterals, will grow creating ramification. Leave the tips alone and you will grow at the ends and not have ramification. If you are developing a bonsai, keep the tips growing to fatten the trunk and grow stronger roots. If you were to incorrectly cut the big bud tips of a three year old developing tree, you will set that tree back a year as you will lose trunk growth and root growth. Working on established bonsai is the opposite of working on a younger tree. You have the trunk girth and good roots established. Now you want branch ramification and balance, so you would cut some tips to reduce auxin levels and favor cytokinins which will drive lateral growth.

Bonsai techniques like pruning, defoliation or partial defoliation, repotting, etc., change the hormone imbalance and therefore change what the tree's response will be. Azaleas are shrub like in that they are strong in low branch area and weaker on top. If we cut a low branch, we reduce auxins, favoring cytokinins which will cause more strength and growth at the top. If we decandle a black pine and simultaneously pull a few needles (which reduces sugar production), we create less auxin. These moves will drive significant new budding. If we repot a tree in spring, we cut root tips which reduces cytokinins and favors auxins. This results in the needed root growth stimulated by the auxins. Also, in years you repot a mature bonsai, wait a bit longer than usual to prune shoot tips as these are the sources of auxin driving the fresh root growth the tree needs after a repotting. I hope you are seeing how the hormones work in opposite but harmonious ways and you can see the science behind the scenes when we perform specific bonsai techniques. Cool, huh?

**Sugars** play a critical role in a tree's growth and health. Recent scientific knowledge has shown that sugars might even be of greater importance to a tree's growth than hormones. Sugar moves through the phloem from source to sink (buds, meristems).

Sugar loss determines where a tree puts its energy. For example if you reduce sugar production through pine needle pulling or large leaf defoliation, the tree will send its energy to other buds. This balances bud sizes and future shoots and leaf sizes. No hormones are involved in this process.

**Black** pines are strong trees. Needle pulling results in more buds, more shoots, which in turn creates more "solar panels" and more sugar in response to our manually reducing sugar produced from the needles we pulled. When we prune a deciduous branch, we cut auxin which allows secondary shoots to now grow. But, we also have reduced sugar production at the strong end of that branch. The tree will send its sugar elsewhere now – to lesser shoots and make them stronger. If we defoliate, even just the big leaves, the strong areas weaken somewhat and the energy goes to weaker areas, thus balancing and beautifying our bonsai.

If you cut a larger branch, what happens? It grows strongly in response. As Gary Wood often asks, "Where does a tree grow, when you cut it?" The answer is where you cut it. But, you will get growth elsewhere, as well. When you cut a single large leaf away, the leaf shoot next to it grows stronger.

Sugar sources and sinks have large impacts on our bonsai. Let's consider some other bonsai techniques. Think about pruning with scissors versus using pruning shears. Pruners will give you major changes, scissors will give you minor changes in sugar impact. If you wire and lower a branch, what happens? Auxins from the tips now have to flow "uphill" and auxins do not do that well. Thus, the tree has less auxin flow and now secondary shoots and dormant buds on that branch become more active. Leaves and twigs grow and balance out the tree. This also explains why the ends of long cascade branches often are not very strong – auxin flow is reduced by having to flow uphill. Laterals closer to the trunk will be favored at the expense of the cascade tip.

Here is a general rule on pruning. If you prune in spring you will get extension. Prune in fall and you will get more buds. Hormones and sugars play

a role in this.

A branch in sunlight is favored and creates more sugar and the branch extends and grows longer. The tree gets bigger, but not denser. This is the opposite of what we generally want in bonsai. But, if ALL the branches get sunlight, the tree is more balanced and it will get denser as well. This is the science behind why we create triangular shaped foliage. The branches just below the apex have to extend just a bit longer than the apex in order to reach sunlight. The branches just below those branches have to extend even a bit further beyond the ones above them to reach sun. And the bottom branches have to be the longest to reach sunlight. Guess what shape you have just created? The famous triangular shape seen on most finished bonsai. It may be equilateral or it may be an uneven triangle for interest, but this explains the basic science behind the shape. We also should rotate our trees to get even sunlight to all sides and branches and we do bonsai techniques to open up our trees to let light into the interior so interior buds and shoots can receive their share of photons, too.

We hear about trees and shrubs. What is the difference? In trees the apex is naturally strong and lower branches tend to weaken if left alone. It is the opposite in shrubs where the lower branches are naturally strong and the apex is weaker if left alone. When we use trees or shrubs as bonsai, we have to address the shrub's weak apex and the tree's weaker low branches which for design purposes we want to keep for perhaps decades. To do this we basically have to trick a shrub into thinking it is a tree and trick a tree into thinking it is a shrub by using appropriate bonsai techniques that drive these reactions to occur. We control naturally strong areas through pruning, needle plucking, decandling, leaf reduction, defoliation. And we work to keep naturally weaker areas strong, like low branches we let extend into sunlight. If we left trees alone, they will often naturally lose the lower branches (think literati). If we leave shrubs alone, we will never have a main trunk.

**Fertilization** confuses people. So many minerals,

so many brands, so many species differences, strong vs weak trees, different seasons, different stages of development. Fertilization is only one link of many. NPK refers to Nitrogen which helps make the building blocks called amino acids, Phosphorous which is critical to cell membranes and Potassium which controls opening and closing of stomata. There are other minerals in fertilizer like calcium, sulfur, and magnesium which happens to be the center of chlorophyll molecules.

Nitrogen is easily flushed out of bonsai soils (especially the ones without organic components like pine bark), so the Japanese use fertilizer cakes of low NPK which allows a little fertilizer to be available every day. Miracle Grow gives a big boost, but disappears quickly until next time you apply it.

If you over fertilize your trees, you get coarse growth. An old bonsai will begin to look young with thick twigging at the tips of branches. The tree will have large leaves and needles and long internodes. If you under fertilize, your tree will not have enough energy/strength to stay healthy, grow properly, or respond well to bonsai techniques.

For single flush trees like white or mugho pines or Japanese maples, it is best to wait until the spring growth slows and hardens, prior to fertilizing. Early fertilization will create too large needles and leaves and internodes.

Regarding soil type and fertilization, organic containing soils can hold onto nitrogen while volcanic soils like Boon mix (pumice, lava, akadama, no organic component like pine bark), do not hold onto Nitrogen for long. Organic soils can be okay for the growing stage of trees, but not so much for more mature trees. A Boon mix is easier to monitor and control the fertilizer levels in the soil. A black pine often is fertilized in the early spring, then fertilization is stopped around decandling time, then picked back up hard in August for the rest of the year. An organic containing soil won't allow you to suddenly stop fertilization, as it has built up levels in the soil. With a Boon type mix, the Nitrogen level will be washed out to a low level during the time you do not want the tree to have Nitrogen. Better control equals better trees.

That is a lot of information. If you are still with me, give yourselves a real pat on the back. With this knowledge, you will now be able to understand better why bonsai techniques work and when you should use them and when not to use them. You will be able to understand your trees better and how to help them become stronger in certain areas, healthier, and more beautiful.

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## **Timely Tips**

It is early spring and repotting is underway or even finished for some bonsai hobbyists. Leaves are pushing. We are in that danger zone where, if we put our deciduous trees or newly potted conifers outside, that they may be damaged if the night time temp drops below freezing. So, many of us begin the “dance” of taking trees outside for sun, but having to bring them back inside if night time temps drop below freezing. We could leave them inside the garage or shed, except there is usually not near enough light in those structures for the new leaves. With low light conditions the leaves grow too large and the internodes extend too long for good bonsai.

If you leave trees inside garages, keep as much light on them as possible. Turn on lights, open garage doors while home to allow light into the trees, move the trees to a three season porch or where ever they can get light without suffering from low temps. It is a tough time of year.

Keep your trees watered as they will gradually be using more water than they did over winter. Newly repotted trees should not be exposed to freezing temps either until next fall. Keep any trees moved outside away from the heavy spring winds we often see in Iowa. Also, when you first put trees out, graduate the amount of sunlight they get. Do not put them out for the first time on a bright sunny day. Acclimate them for a couple of hours of sunlight or put them out on a cloudy day or for only half of a cloudy day. They will soon be acclimated.

Regarding fertilizer, avoid fertilizer for any newly repotted tree for at least three weeks. The first fertilizer of spring should be light. Many will use fish emulsion which is low NPK and may have some additional nutrients your trees can use. Trees in development stage can be fertilized in spring. More finished bonsai should see less fertilizer. Most pines do not need fertilizer until after de candling occurs and the new needles harden off, say August 1.

Keep an eye out for pests or signs of disease. Another thing to check for is to observe how well your trees absorb water. Does water pool up on the surface when you water? If so, try top dressing the soil by removing the top layer of old soil and replacing it with fresh new soil. You may even need to poke some holes into the remaining soil after removing the old surface soil and before adding fresh top soil.

Remember, some trees like European Beech are very late to push buds in spring time. Be patient and do not give up too soon. Newly repotted trees will take longer for their leaves to push and extend, too. If certain of your trees are slower than usual to push leaves, those trees may be weak for some reason and you will want to use extra care and caution to get them back to being healthy and strong again.

Spring is a great time to watch your bonsai trees come to life. Seeing the new beautiful fresh green growth is very satisfying. Enjoy the experience. Come to your local club meetings and share the joys of bonsai. Bring a favorite tree or a photo you want to share. I don't yet have grand kids, so I share pictures of trees!  
Enjoy your bonsai this spring.