
MIDWEST BONSAI CONNECTION

www.midwestbonsai.org

2021 March Thoughts

We are happy to report that on February 1st we had our first meeting since March of 2020, due to COVID-19 restrictions. This meeting was also our first ever virtual meeting which was held using Webex technology. We want to thank of course our Programming Chair Victor Zurczak, presenter Linda Camp and our Webmaster and technical guru Mathew Corpolongo. While a modest first effort we had 14 members in attendance and would appreciate their feedback on any suggestions for improvement.

Note that our March 8th meeting will also be virtual. This is a combined meeting held in conjunction

with Prairie State Bonsai Society. We are pleased to be able to offer, presentation on Juniper styling with question and answer session with Bjorn Bjorholm. Bjorn is an American bonsai artist. Starting at the age of 22 he became an apprentice under Kei-ichi Fujikawa at Kouka-en Nursery in Osaka, for six years, before becoming certified by the Nippon Bonsai Association. In 2018, Bjorholm founded Eisei-en Bonsai Garden in Mount Juliet, Tennessee. See detailed information on how to join this meeting, later in newsletter.

The Board is also moving forward on plans for an outdoor event on the

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Ivan Watters Passing

Sadly, after a severe illness Ivan, one of our founding members, current board member and sensai, passed away quietly, on February 26th at the age of 85. Memorial Visitation to be scheduled soon. Cremation and Inurnment is Private. In lieu of flowers donations to the Midwest Bonsai Society, PO Box 1373, Highland Park, IL 60035 are appreciated. To leave a condolence or for more information visit www.funerals.pro or call 847-537-6600.

weekend of June 12th. To date our best option for an available site is in Wheaton at the home of Matt Mazza and in the empty lot across the street. The event would be held under tents and would include, some tree displays, and tree, pot, tool and scroll sales. There will likely also be some workshops. Face-masks and social distancing will certainly be required.

In addition, we are planning to hold the August Midwest Bonsai Society annual exhibit on the

weekend of August 20th - 22nd at the Chicago Botanic Garden. With Covid-19 and Garden permission likely, but not certain, we are moving forward and keeping our fingers crossed. Please put both dates on your calendar.

Please let us know if you have any suggestions for other things, we can be doing going forward to help our members enjoy this fascinating art form while maintaining social distancing.

—Larry Stephan

March Meeting Focus - Our First Virtual Meeting with a Guest Artist

The March meeting scheduled for 7:00 p.m. to 9:00 on Monday, March 8th, will be conducted as a ZOOM meeting with Bjorn Bjorholm.

7:00 PM – No Bonsai 101 but newsletter does include Bonsai 101 “Why and When to Repot”. 7:00 PM - General program;

Juniper Styling demonstration, including as time permits scion grafting techniques, presented by Bjorn Bjorholm from Eisei-en Bonsai School, Mount Juliet, Tennessee. We will be able to submit questions for him to answer during the meeting. Bjorn an American artist apprenticed for six years with Kei-

ichi Fujikawa at Kouka-en Nursery in Osaka Japan.

This is only for members and is a combined event with The Prairie State Bonsai Society. The attendance at the meeting is limited to 50 from each club. In order to join in members, need to send an email to Victor Zurczak,

MBS Programming Chairman at manofnature2002@yahoo.com Let him know you to want to attend and then we will send return email with invitation/link to meeting and instructions for participating.

Hope you can join us for this event

March Events Calendar

Please note: What we have shown below is a list of events scheduled as of February 20, 2021. Where we have information on cancellations due to COVID 19 we have included same. Good to see local clubs, while still not meeting in person, are getting some virtual meetings scheduled. In addition, BC Bonsai and Hidden Gardens are open and offering workshops and or services and supplies. Chris Baker from the Chicago Botanic Garden is offering Zoom workshops. Please check all events to insure they have not been canceled or changed.

Tuesday March 2, 2020

MILWAUKEE BONSAI SOCIETY GENERAL MEETING

6:30 PM, Zoom Meeting. Program: Mauro Stemberger will discuss Bonsai design. Followed by Tasha F with a thoughtful analogy on resilience and perseverance. For more Information go to http://www.milwaukeebonsai.org/mbs_schedule.html

Monday March 8, 2021

MIDWEST BONSAI SOCIETY MARCH MEETING - VIRTUAL MEETING DUE TO COVID 19 for March 8, 2021.

7:00 PM - No Bonsai 101 Program but newsletter does include Bonsai 101 "Why and When to Repot" 7:00 PM - General program; Juniper Styling demonstration, including as time permits scion grafting techniques, presented by Bjorn Bjorholm. For more information or updates go to <http://www.midwestbonsai.org/meetings>

Wednesday March 8, 2021

PRAIRIE STATE BONSAI SOCIETY GENERAL MEETING – ZOOM MEETING DUE TO COVID 19. March 8, 2021.

7:00 PM - General program; Juniper Styling demonstration, including as time permits scion grafting techniques, presented by Bjorn Bjorholm. For more information or updates go to <https://prairiestatebonsai.com/news-and-events/>

Saturday March 6, 13, 20, & 27 2021

SATURDAY MORNING BONSAI with Mark Karczewski

9:00 AM - 12:00 PM, Hidden Gardens in Willowbrook, IL. Bring your own tree workshop. For further information go to http://www.hidden.garden.net/bonsai_saturday_morning.html or call 630-655-8283.

Saturday or Sunday March 13 or 14, 2021

LARCH FOREST - WORKSHOP at BC Bonsai

1:00 PM - 3:30 PM, workshop includes trees, at 2250 Durham Drive, Wheaton, IL. For further information or to register go to <http://www.bcbonsai.com> or call 630-386-1515.

Saturday March 20, 2021

PINES - OUT OF STORAGE STYLING WORKSHOP at BC Bonsai

9:30 AM - 12:00 PM, bring your own tree workshop at 2250 Durham Drive, Wheaton, IL. For further information or to register go to <http://www.bcbonsai.com> or call 630-386-1515.

Sunday or Monday March 21 or 22, 2021

TREE HARVESTING WORKSHOP at BC Bonsai

1:00 PM - 3:30 PM, Bring your shovels and saws, at Nursery in Paw Paw, IL. For further information or to register go to <http://www.bcbonsai.com> or call 630-386-1515.

Wednesday, March 24, 2021

SPRING BONSAI CARE WORKSHOP: ONLINE with Chris Baker

6:00 PM - 8:00 PM, Chicago Botanic Garden, Explore the seasonal care of deciduous, evergreen and tropical bonsai starting

with the emergence of winter dormancy and through the growing season. Topics will include soil and repotting, spring growth, pest management and much more. For more information or to register for workshop go to https://www.chicagobotanic.org/adult_education/horticulture/deciduous_bonsai_tree_workshop_online

Saturday March 27, 2021

HARDY TREE REPOTTING WORKSHOP at BC Bonsai

10:00 AM - 5:00 PM, bring your own tree workshop at 2250 Durham Drive, Wheaton, IL. For further information or to register go to <http://www.bcbonsai.com> or call 630-386-1515.

Monday April 5, 2021

MIDWEST BONSAI SOCIETY APRIL MEETING - WEBEX MEETING DUE TO COVID 19

7:00 PM, Program: TBD. For more information or updates go to <http://www.midwestbonsai.org/meetings>

Tuesday April 6, 2020

MILWAUKEE BONSAI SOCIETY GENERAL MEETING

6:30 PM, Zoom Meeting. Program: Pauline Muth will make her first appearance as an artist in Milwaukee. She will be demonstrating Penjing. For more Information go to http://www.milwaukeebonsai.org/mbs_schedule.html

Wednesday April 7, 2021

PRAIRIE STATE BONSAI SOCIETY GENERAL MEETING Program TBD.

For more information or updates go to <https://prairiestatebonsai.com/news-and-events/>

Saturday April 3, 10, 17, & 24, 2021

SATURDAY MORNING BONSAI with Mark Karczewski

9:00 AM - 12:00 PM, Hidden Gardens in Willowbrook, IL. Bring your own tree workshop. For further information go to http://www.hidden.garden.net/bonsai_saturday_morning.html or call 630-655-8283.

Saturday April 10 or 24, 2021

Junipers – OUT OF STORAGE STYLING WORKSHOP at BC Bonsai

9:30 AM - 12:00 PM, bring your own tree workshop or purchase juniper at 2250 Durham Drive, Wheaton, IL. For further information or to register go to <http://www.bcbonsai.com> or call 630-386-1515.

Sunday or Monday April 11, 12, 18 or 19, 2021

TREE HARVESTING WORKSHOP at BC Bonsai

1:00 PM - 3:30 PM, Bring your shovels and saws, at Nursery in Paw Paw, IL. For further information or to register go to <http://www.bcbonsai.com> or call 630-386-1515.

Saturday April 17, 2021

Maples and Deciduous Trees – OUT OF STORAGE STYLING WORKSHOP at BC Bonsai

9:30 AM - 12:00 PM, bring your own tree workshop or purchase juniper at 2250 Durham Drive, Wheaton, IL. For further information or to register go to <http://www.bcbonsai.com> or call 630-386-1515.

Wednesday, April 21, 2021

AZALEA BONSAI CARE WORKSHOP: ONLINE with Chris Baker

6:00 PM - 8:00 PM, Chicago Botanic Garden, Azaleas are among the most beautiful flowering bonsai around. Soil types, fertilizing, root pruning, and more will be covered in this fun and informative class. For more information or to register for workshop go to https://www.chicagobotanic.org/adult_education/horticulture/deciduous_bonsai_tree_workshop_online

Monthly Care Report - March 2021

If any of your deciduous trees need to be repotted this year, you will be able to do the repotting as soon as the winter breaks and the ground thaws, which will be soon, end of March and into April. Look to your trees for signs that they are waking up. Look for swelling buds and white growing tips at the end of your roots. Those deciduous trees that you were unsure about pruning can probably be safely pruned, but protect them from heavy frost. Avoid repotting any larch trees that are showing green. If they are showing green, it is best to wait until next year.

Generally there is no need to begin fertilizing your trees yet. Let them leaf out, and for your repotted trees, begin your feeding regime at least one month after repotting. You may want to keep them sheltered under the eaves of the house and out of cold winds. By the end of March, depending on weather conditions, trees

can be gradually brought out of winter shelter. Evergreens may be fertilized lightly now in April and, in general, you may spray for fungus and insects on a warm day. Evergreens can be lifted until the end of April. March and April are also good months to dig trees from the wild, keeping as much fibrous root attached as possible. Keep your trees cool. Don't be in a hurry to encourage early growth, as it can still get cold.

Transplanting from one pot to another is generally done for aesthetic reasons, but soil changing is necessary for the health of the tree. Some rapidly growing trees should have their soil changed annually. Some trees can go two, maybe up to three years. Slower growing conifers and some evergreens may not need their soil changed more than every three to five years. A younger tree, still in development, will need it sooner, where an older tree less often. You also

must consider the size of the pot. However, the best indicator of a need for soil change is not time, but the condition of the tree. A vigorous, healthy tree does not need its soil changed and should not be disturbed.

FERTILIZING... Do not feed your deciduous trees until leaves have hardened off. That means not until all the leaves are out and branch tips are starting to grow. If you feed them too early you will get a big flush of growth, which translates to long internodes and larger leaves. Too much nitrogen will go to the leaves and not the roots, hence too large of leaves. You fertilize bonsai for optimum health, not for growth per se like other plants. You need to tailor a fertilization program based on your trees individual needs. You can start feeding your tropicals a bit more, but it is too early to move them outside. I have pruned some of my Ficus.

PRUNING... You should have already taken a good look at your trees over the winter, now knowing where you want to go with them.

If you have a branch or apex you want to thicken, try to divert more energy to it by keeping your other branches trimmed back and letting that one grow. If all your main branches are good, then work on your ramification by pruning your secondary and tertiary branches back. Always prune in front of the bud that is growing in the direction you want the branch to grow. If any of the internodes towards the tip of any branch are spaced farther apart, then towards the beginning of the branch (closest to the trunk) prune back to where that elongation begins. A branch should be styled just like a tree, the secondary branches on a main branch should get smaller and closer together as you go towards the tip. The tertiary branches on your secondary branches should do the same. Proper directional pruning of your bonsai is a must, to increase ramification and for good taper.

—Ed Hake • Fort Wayne Bonsai Club • Reprinted by Permission. Compiled from several Web articles with adaptation to our area

MBS Bonsai 101

Why and When to Repot Bonsai

The Roots of the Tree

The roots of the tree are very interesting forms of life. In many respects they mirror the upper portion of the tree (fine branching of roots usually produces fine top branching and the depth and spread of the root system generally balances the height and spread of the trunk and branches).

The branches of a tree are totally dependent on the

sun for light to manufacture food through photosynthesis and they use carbon dioxide while they release oxygen into the atmosphere. The roots and the other hand, live in a world of darkness while they silently push their way toward the earth's center, using available oxygen and giving off carbon dioxide, they form intimate relationships with the soil bacteria and often with the beneficial fungus known as mycorrhiza.

The roots have two main functions. First they provide an anchor for the tree, to hold it steady in the ground and give it stability. The "tap root" is specifically for this purpose. The other job is to seek through the soil for moisture and nutrients and to transfer these to the top portion of the tree in the form of salts and minerals in solution.

The roots are growing fairly constantly. As the root tip

pushes its way through the soil it is continuously casting off old cells and these act as a lubricant for the root passage. Behind this root tip are fine root hairs and it is these that collect the nutrients in solution to feed the tree. It is these very young roots (usually not more than 2 weeks old) that are actively collecting food. All the others are merely forming the "go-between" channels and providing support by balancing the top part of the tree.

Why Root Pruning is Necessary

(Continued on Page 4)

When and Why

Continued from Page 3

If a tree is planted in a container, the roots will continue to grow until they used up all the nourishment and space available. At this point, the tree must be either planted in a larger container or root pruned, if the health of the tree is to be maintained. As we have just seen, it is only the very youngest roots that are acting to feed the tree and, like the top portion of a tree, cutting actually stimulates re-growth. A tree in a container doesn't need the heavy roots for stability that the tree in the ground requires and, when root pruned, the tree reacts by sending out a mass of new active feeder roots. The response is seen, above ground, by renewed vigor and health. Instead of having a pot full of old roots that are no longer functional, we are renewing them with those that will act to rejuvenate the tree.

Thus, we see that root pruning is good for trees and while each passing year imparts more of the venerable characteristics of age to our trees, they can simultaneously have a perpetual young system of roots. Trees, in fact, can probably come closer to immortality than any other life form on earth.

With root pruning and repotting also comes the opportunity to study the root system and check for damage or the existence of any diseases or pests.

Also, as a tree becomes root bound, porosity decreases and consequently, circulation of air and water is reduced. This is due to the fact that fewer soil pores exist as the granules in the soil mixture break down and the fine root-hairs have grown through

the mix, clogging most of the remaining pores.

Times for Repotting

The best time for repotting is at the end of the dormant season, just prior to the main growth period for the tree. For most plants, this means late winter or early spring, when the new buds are swelling but have not yet opened up into new growth. (For sub-tropicals it may be late spring to early summer).

There is another time when many tree varieties may be root pruned. This is late summer to early autumn, at the end of summer dormancy, (Note, when temperatures become too hot in summer, most trees cease growing. The temperature for growth is approximately 40- 104 degrees F, depending on the species, and growth is already slowing down at 86F for most trees) and before the short period of active growth that usually takes place in early autumn. For the touchier varieties, late winter to early spring is better, as the period of time for safe root pruning is longer and the subsequent re-growth is stronger than in autumn. The tree is, therefore more likely to go through root pruning without any setback.

Winter is not a good time for repotting most trees, as the roots are making little or no new growth to heal the cuts and supply more feeder roots. As a consequence, root-rot may often set in. In spring to mid-summer, root pruning and repotting is also risky as this is the tree's active growth period and while the tree is vigorously producing new, soft foliage. Any break in the supply of water may damage or kill the tree. In an emergency

where root pruning and / or repotting is essential in summer, complete defoliation of trees that may be defoliated, and trimming back of other types, will act as a safety measure (as the tree will not lose too much water through transpiration).

With many trees that flower before leaves appear, repotting is generally done after flowering but before the leaves open. Those that flower in late spring, though, are repotted before flowering.

How Often to Root Prune and Repot Your Bonsai

Trees do not like being disturbed unduly, as, in nature, they live in the same spot of ground all their life. If a tree is in good, healthy condition after last year's root pruning and repotting, you may wish to leave it undisturbed for a further 12 months and perhaps fertilize during the growing season to maintain the tree's vigor.

Young trees, very vigorous varieties, trees that have very heavy crops of fruit or flowers, or trees in small or shallow containers, would benefit by being root pruned yearly (and some-like privet or willow-twice a year!). Actually for some varieties, where the winter temperatures are not severe, there is often no real dormancy. The top of the willow, for example, may be bare through the winter, yet the root can continue to grow at quite a fast rate. Conversely in early spring, sometimes the top of the tree will start to grow – using stored nutrients – while the roots are still dormant. Thus while the top portion reflects the root system and vice versa, occasionally they are out of step for a short period.

As trees become older, they begin to slow down their rate of growth and consequent-

ly, and root pruning need not be done so frequently – perhaps once every 3 to 4 years will be sufficient. True Japanese Black Pines for instance, can be left for 5 years without repotting, particularly when they are over 15 years old. When a tree does become older it is better not to root prune too frequently as this will encourage unnecessary growth and perhaps promote juvenile foliage (on appropriate varieties) or loss of bark.

It may be relevant to mention the danger of suddenly improving the conditions of an old tree that is in a poor state of health. Such a tree often has branches that are so old and woody that they are no longer capable of sending out new growth. If conditions are suddenly improved in terms of fresh, rich soil and space for root growth, the tree wants to grow on top as well and frequently reacts by sending up suckers. This is an attempt, made by the tree, to balance the above ground portion with the rejuvenated root system, however after the suckers grow, the old trunk and branches may die. If improvement of condition is made more slowly, the tree is better able to cope with the changes.

Finally, do not think that roots coming through the bottom drainage hole is a sign that the tree needs repotting. Sometimes roots will appear through the hole very quickly if the area under the pot is moist and humid. There may still be adequate nutrition and space left in the container.

Most text copied from Deborah R. Koreshoff's book *Bonsai It's Art, Science, History and Philosophy*.

—Victor Zurczak

Soil

I've been practicing my bonsai hobby now for a little over 5 years, so if you know it all about soil already, you can take this essay with a grain of...well...surface. This essay is based upon a lot of reading, a lot of listening, a lot of my own observations, and if you'll suffer it, my own interpretations and common sense. I've been adjusting my soil mixes over the last couple of years as I have an occasional "Ope!" moment. That happens as you're learning, particularly in bonsai. Everyone seems to think they have it nailed, they can wrap up one easy solution into a nice little box and mostly do the same thing with everything. It's no wonder beginners get frustrated and give up after a failure or few. It might help if someone was to say: you need to know some things about your tree before you put its roots in a one-size-fits-all soil mix. All of that said, while I may make some suggestions on what I might include in a soil mix for various trees, my intent is to give you a better idea of the attributes of various soil components so that you know how to tailor your mix accordingly.

Getting started, you need to answer some questions: "What species is the tree?" is the most important question you need to ask. This will determine how quickly your mix needs to drain, if you need to add some organics to it for water retention or microbes, the alkalinity requirements, and most importantly, the size of the aggregates. Other important questions are: How old is it? How big is it? Does it normally have smooth or rough bark? Is it in the developmental stage or the finished stage? There could be many more, but then I think we would be entering the realm of impracticality.

Various components of modern bonsai soil are akadama (and premium blend aoki), bark, kanuma, lava, pumice, river sand, sphagnum moss and turface.

There are others, but those are the most used. Most of these components have a neutral alkalinity. Turface is slightly acidic, and bark can be even more so depending upon what it retains. Moss likes acidity, so turface and bark will encourage moss growth (as will rainwater). Sphagnum moss, however, is neutral. Below are some of the attributes of the different soil types:

Akadama (Inorganic): There are people who would use a 100% akadama mix for their trees. Akadama is supposedly THE best growing medium. Akadama is hard-baked Japanese clay, neutral in alkalinity, but it can take on hydrogen ions from rainfall or high nitrogen fertilizers which will make the soil more acidic; something to be careful about. Akadama drains very well but conversely (in a good way), the aggregates retain water very well. In other words, the aggregate stays moist while the gaps between aggregates do not retain water. Roots need to grow into air gaps; roots of most species will not grow well into water (Bald Cypress being an exception). This allows roots in transplanted trees to grow quickly. Akadama is expensive (aoki is very expensive), and it will begin breaking down after plus or minus 3 years. Akadama is usually sold in gradations of 1mm to 3mm, and 3mm to 6mm. For reasons indicated further below, the 1mm to 3mm may cause some difficulty if too much is used in a mix for larger root systems.

Soil that breaks down retains more water and retards root growth. Slower root growth also means slower growth of the tree. If your tree is in the finished stage of its development, you may appreciate this effect. However, you still cannot allow it to go on for too long or you risk harm to the root system. So one needs to be vigilant about checking the roots and soil for repotting frequency.

Bark (Organic): There is a love-hate relationship with bark. Bark is good in deciduous tree mixes for moisture retention so long as you keep the bark moist. Bark that dries out actually repels water, so you need to keep it moist. Bark is organic and breaks down. While this can cause blockage of drainage holes in the pot, it can also cause beneficial bacteria to flourish. The acidity of bark steals the nitrogen from your fertilizers to feed its decomposition. Another drawback is that fertilizer may absorb into bark and eventually leave it as something else. To my simple mind, decomposing bark at tree roots occurs constantly in nature and putting it in the pot with the right kinds of trees is a good thing so long as too much doesn't make it a bad thing. Given the acidity and water-retention characteristics, it is best left out of soil for conifers/pines/junipers.

Kanuma (Inorganic): I have to admit that I'm a little lost with kanuma. I've never used it before, but I recently bought some and intend to transplant my Azaleas into it this year. A great many Azalea growers prefer kanuma, so I will not argue with their success. Azaleas like soil that is more acidic. However, kanuma soil has a pH of ~7.2 which makes its alkalinity neutral; that's why I'm a little lost. Kanuma is a lightweight volcanic rock that retains moisture while allowing excellent drainage. Kanuma also allows roots to grow through it (as opposed to around it) which makes the root system more fibrous. Kanuma can be used with other components as well. It's less expensive than akadama, but the big drawback seems that it breaks down more rapidly. Kanuma will float if you water too quickly.

Note: I'm going to add 10% turface and 5% bark to the kanuma for my younger Azalea mix to see how it

goes since those two additives favor acidity. I have one older Azalea that I will transplant into 100% kanuma as I do not want it to grow quickly.

Lava (Inorganic): With its rough texture, lava helps to promote root bifurcation as roots hit its surface. Lava can also retain a much greater volume of water (more than double) as opposed to other soil ingredients, while still maintaining good air voids between aggregates. Lava also lasts far longer than akadama before breaking down. One Azalea grower actually uses 100% lava for his growing medium. The alkalinity of lava depends largely upon its origin; so, it's probably best to purchase lava from a bonsai dealer. Lava also varies quite a bit in size. While lava retains moisture, adding large lava may send water away to smaller aggregates. 6mm is a good size main aggregate component for most bonsai, so lava rock probably should not exceed 9mm (~3/8") or so.

Pumice (Inorganic): Pumice is a product of volcanic eruption and not solidified molten rock like lava. The results are less voids within the granule, less density and a softer texture. Because of its lighter structure, pumice tends to float at first when watering, but then can become water-logged. So care must be taken not to overwater if pumice is a significant part of a mix. Because of the soft surface, roots ramify well around it. Pumice loses its properties within a few years but does not cause drain blockage.

River Sand (Inorganic): River sand is typically free of fines and organics as they are naturally washed away by river flow. Given the lack of organics, it has few chemical properties. Aggregate diameter generally isn't much greater than 2mm (~1/12"). Diameters less than 2mm generally

(Continued on page 6)

Soil

Continued from Page 5

need to be sifted away or the medium will drain slowly, and the low voids will not allow good root growth.

Sphagnum (Organic): Sphagnum moss has a neutral alkalinity and is far superior to anything else at growing roots. However, it decays quickly and when it does so, it becomes compacted and does not allow air voids for water to pass through. While roots enjoy this type of moss for the water, they also need air. Sphagnum moss will block drainage if too much is used. You cannot use 100% sphagnum in a potted soil mix. It would be best to use no more than necessary only in the specific areas where you need roots.

When I use sphagnum, I wet it and place it where I need root growth. I keep an eye on it and once strong roots have grown, I carefully move the moss away and replace it with akadama, surface or a mix of the other ingredients. After repotting, I place sphagnum moss on the surface of the pot for a week or two to keep the pot cool, moist, and as sun protection for the roots. However, I've experienced that Brazilian Raintree does not like this action after a repotting.

Surface (Inorganic): There are people who use a 100% surface mix for their trees. You can grow almost anything in surface, so why not? Well, just because you can doesn't mean you should. Surface is slightly more acidic than most bonsai soils with a pH of ~5.8. Trees that don't care for more acidity will perform less favorably (Azaleas will like it whereas conifers will not). Also, surface is manufactured in finer granules (usually around 3mm or 3/32") which may work well for some tree attributes and not so well for others. Because of the smaller particles, water may

not evaporate as evenly throughout a 100% surface mix, causing one to think that the pot is dry when only the surface is actually dry. Surface is VERY inexpensive compared to other bonsai media, and it lasts for about 20 years before breaking down. These are very attractive attributes that shouldn't be ignored. If appropriate, a little bit of surface added to your soil mixture can help keep your soil stable longer, which may save your tree some stress if you don't catch your other soil components breaking down.

Note: *In a side-by-side comparison, my portulacaris afra prefer surface over akadama. I have two plants in each soil type. The leaves on the trees in surface are more plentiful, bright and shiny.*

Discussion:

Inorganic aggregate soils should comprise the majority of your bonsai mix [though many tropical tree growers will argue against it]. Assuming we use mostly aggregates, now that we know a few things about the most popular bonsai soils, we should also think about grain size. Good grain sizes for bonsai range from ~2mm to 6mm; perhaps a bit larger overall for certain situations to be discussed below. Aggregates smaller than 2mm are probably best to be sifted out of the mix and used for cuttings, seeds or very small trees (sift outdoors and/or wear a mask). There are a range of reasons that you may want to use larger or smaller aggregates in your soil mix for your particular tree; you need to know why you would use them. That discussion follows:

Most of us learned that we want to place larger aggregates toward the bottom of the pot to keep drain holes open. I found it interesting that current theory says that placing large aggregate at the base of the pot may actually cause the smaller

aggregates to draw water upward, thus leaving the lower roots without adequate water. I would like to see the data on that; or one of these days I'll find a transparent glass pot and test it for myself. Regardless, this comes from more than one source, so we'll consider it a possibility.

I still like to keep larger aggregate right near the drainage holes for some insurance. I don't use stone or broken clay pot pieces as the theory above deems it inappropriate. Instead, knowing that pumice and lava tend to retain water, I place larger sized pumice or lava (+/- 3/8" round) near the drainage holes, assuming that water retention properties might offset some of the action causing large aggregates to shed water to small aggregates above. Let's not forget that gravity is also working in our favor. I'll continue to do this until I either see the evidence or enough masters agree that some larger aggregate at the drain is harmful.

Many masters feel that a homogeneous particle size from top to bottom of the pot is best for drainage. This more or less means that you should not drastically change the particle size in layers within the pot. It does not mean that you can't have different particle sizes within the mix.

Particle size is very important in the examination of the surface area over which roots will grow, surface area of water retained by sticking to the aggregate, and air voids remaining between aggregates and water. The roots need both air and water. The problem of determining the most efficient aggregate size becomes one of surface area relative to volume (for water) as compared to density (for air). Tackling the surface area vs. volume first, for a round sphere:

$$\begin{aligned} \text{Surface Area (S)} &= 4\pi r^2 \\ \text{and Volume (V)} &= 4\pi r^3/3 \end{aligned}$$

Doing a little algebra, we can reduce the Surface Area/Volume ratio to:

$$S/V = 3/r$$

So, if our aggregate diameter is 1/4", $S/V = 24$ (remember radius = diameter/2). If our aggregate diameter is 1/2", $S/V = 12$. On the basis of the volume that an aggregate displaces in a pot, we can see that there is more surface area per volume on the smaller diameter aggregates, and thus the smaller aggregate appears to be more beneficial for our roots. As insinuated under "Akadama" above, water sticking to the aggregates will cause the roots to grow more quickly. However, the smaller the aggregate size, the denser the aggregate mix becomes and the less air voids between particles. We can start to figure out the void ratios of various mixes with phase diagrams, but that falls just a bit outside of the bonsai practitioner's need. Suffice it to say that the smaller the particle, the less voids between particles, and the less room for root tips to grow into air gaps and obtain both the water and oxygen they need for healthy growth. For practical purposes, a lower limit of 2mm-3mm (~1/8") for the particle size will suffice for most trees in pots.

The predominant particle size that you need is dependent upon your tree. If you're dealing with cuttings or small trees where the roots aren't large, you're going to want a smaller particle size in the pot. The smaller aggregate will help to interlock the small roots in the pot. Since the roots are small, the tips can more easily seek out the smaller air voids for growth and oxygen. Even though we wire the trees into the pot, I think that most would agree that the smaller aggregates help keep the smaller root systems more stable. For cuttings or seeds, larger aggregates provide too much air space and very little stability. If you're dealing with larger or more established

(Continued on page 7)

Soil

Continued from Page 6

trees with enough established roots, the larger air voids aren't an issue. The larger roots already offer the stability needed, and they won't move as new roots are being created. The larger roots will nourish the smaller roots as they're growing so that the new roots soon become the feeder roots that we desire.

Adding a lot of fine aggregates in with larger aggregates tends to fill voids needed for air and water. Smaller aggregates tend to create a stronger interlock between the larger aggregates until there is a higher percentage of small to large, or unless the aggregate is so small (1mm or less) that it weakens the interlock between larger aggregates. So too many fines may make your mix quite hard to where it becomes difficult to scrape down into the pot. If you have trouble with a chop stick, your roots are going to have some difficulty as well. While adding some fines to a larger aggregate mix may assist in the growth of small roots, adding too much is problematic. We don't really want aggregates less than 2mm anyway due to drainage issues.

I try to limit 2mm aggregates to no more than 10%-15% of my mix for established trees.

Another consideration with your soil mix is the bark texture you desire. I read somewhere that the coarser your soil mix, the more coarse the bark on your tree. Conversely, the less coarse your soil mix, the smoother your bark. Keep in mind that your tree species is what it is, and you aren't going to drastically change the bark texture. As such, the elements of the earlier discussion take precedence. Nonetheless, this is a good thing to know.

On trees that look better

with coarse bark, I add more lava rock. I still use lava in my mix with, for example, my Brazilian Raintree for root bifurcation purposes; but not as much as I would for a Rough Bark Maple.

For another twist: trees that are already well refined in the developed stage, which you do not want to grow quickly, may benefit for a time with a smaller aggregate mix. The superstructure will grow more slowly if there is less air in the soil making the roots grow more slowly. I don't think that constantly repotting a large, developed tree in a finer aggregate mix is healthy for the tree. The tree still needs to maintain vigor so yes, you still need to prune! But slowing down the growth for periods of time could help with keeping branches less thick or maintaining features that you do not want to change or sacrifice until much later.

Regarding pine bark, deciduous trees and tropical can benefit from the water retention properties. Acid loving trees may benefit from it for its acidity. Pines/conifers/junipers will not like it, so leave it out of those soil mixes. It's best to keep your percentages of bark relatively small for when it breaks down, it creates conditions where too much water may plug the drain or soak roots. There are certain trees like Azalea, Bald Cypress, Redwoods, Birch, Beech, Hornbeams, Elms, Maples and many tropical plants that prefer the organic nature of pine bark and would therefore benefit from a larger percentage of it in your soil. What is a "larger percentage?" Well, I don't know! Maybe two handfuls instead of one? Say about 10% of your mix. Remember your mix needs to drain, and that bark introduces unknowns for reasons previously discussed.

Lastly in regard to turface, I like it because it's very inexpensive, and I can count on it to not break down whereas

We're Still Looking for a few Great Trees – Photos that is!



We're working tirelessly at your Midwest Bonsai Society to remain relevant to you our members The pandemic has kept us apart, but we all still love bonsai! So, to stay connected, we'd like to see photos of your favorite trees this past growing season, with a short descriptive write-up. We'll publish your photos in a special identity protected "Photo Gallery" in an upcoming MBS newsletter, for all of our members to enjoy. Members can also send email votes and comments on the trees that they like, and a winner will receive a small prize from MBS! So, what could be better to keep us connected than viewing wonderful bonsai photos, coupled with a bit of competitive fun!

Send photos today to our Events Chairman Victor Zurczak (manofnature2002@yahoo.com) and cc our Newsletter Editor Dick Ruemmele (dickruemmele@gmail.com).

We look forward to seeing your beautiful trees!

most other mix components will. I like saving money when it makes cents (hah!), and I like stability. I also like turface for trees that like it. Depending upon the manufacturer and origin of the material, alkalinity for turface can have a fairly wide range, but it does tend more toward the acidic to neutral end of the spectrum. I'll use a bit more of it for trees that like or don't mind a little more acidity, which is most of them. I'll use it less for trees that prefer a higher alkalinity like pines/conifers/junipers.

Without getting specific about percentages of the various soil types and aggregate sizes, I hope it's fairly clear that for the majority of trees, the predomi-

nant aggregate size should be in the range of 3 mm to 6 mm. From there, you can add other components based upon the species of tree and what you think you need to accomplish with it. Just be careful to add only a small percentage of aggregate (or soil type) that is less than 3 mm in size.

In conclusion, hopefully this essay provides you with some better knowledge and incentive for tailoring your soil mixes for the species, size and developmental stage of your trees. Bonsai is not one-size-fits-all, and your trees will benefit from more attention to detail. Happy tree, happy me!

—Matt Mazza

Chicago Bonsai Club

Our next regularly scheduled meeting is in March but due to the COVID-19. This meeting has been cancelled due to closure of Garfield Park Conservatory. Hopefully, we will be able to find an alternative space. Please watch for further information in the MBS newsletter.

Please note that our MBS General meeting is virtual on March 8 at 7:00 PM - General program; Juniper Styling demonstration, including as time permits scion grafting techniques, presented by Bjorn Bjorholm from Eisei-en Bonsai School, Mount Juliet, Tennessee. Chicago Chapter members can join without the need to drive to the garden. See "March Meeting Focus" announcement.

If you would like further information about or to join the club, please contact: Susan at sukazoo17@gmail.com or call 773-235-9479.

MBS Helpline

Struggling with how much fertilizer to give your tree? Are you concerned about how to take care of your tree in the winter? Does your prized tree look sick? Simply email us at midwest.bonsai@yahoo.com and one of your members will get back to you.

Launched a few months ago, our senior members are available to answer questions you may have about caring for and maintaining your bonsai trees.

Also look to our website for previously answered questions. There is a direct link to the section from the left-hand navigation bar on our website Home Page under "Blog" or use this link <https://www.midwestbonsai.org/blog/2021/1/16/ask-a-question-our-help-line>

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Midwest Bonsai Connection

WANTED: Details of your Over-Wintering Setup

One of the most concerning areas for new bonsai practitioners is how to keep trees alive over our cold winter months. Are you keeping your trees in an unheated garage? Do your trees stay healthy outside all winter? Do you make use of a root cellar or a temperature-controlled greenhouse? Are your trees in a dedicated room in your home with LED grow lights? Do you check your trees daily, or weekly, or hardly at all?

With so many different ways to take care of our trees during the winter months, the Society is planning ahead to next fall, looking to create an overview of what works for our members to keep trees alive and healthy all winter long in the Chicagoland region.

Send an email to midwest.bonsai@yahoo.com including pictures of your setup, with a brief description of key attributes that make it work for you! Temperate and Tropical tree setups are both welcomed. All personal details will be removed, and text edited before publishing, either as part of our newsletter, or as an upcoming meeting topic.

We really hope to help old and new members alike learn something new to help them protect their trees in the winter of 2021-2022.

Library Resources

MBS has a fine collection of Bonsai books and journals which are available for loan. Please contact the Librarian for information.

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