



Toronto Bonsai Society

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**INTRODUCTION TO  
BONSAI**



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## Information for Beginners

by Bob Wilcox

### What to do after you've joined a club?

There are many reasons why people join a bonsai club. The most common reasons are to develop their skills in horticulture and design, to take part in club activities and to socialize with people who share an interest in bonsai. Joining a bonsai club has similarities to joining a health club. In both cases joining the club is not enough - if you wish to develop your skills, you have to get involved in the activities.

### THINGS YOU WILL NEED:

#### Information

The information available from a club that will show beginners how to design and maintain bonsai is available from many sources such as books, videotapes, conversations and hands-on experience. The most accessible source is library books. In the Toronto Bonsai Society's extensive library there are at least 10 books written primarily for beginners. In many cases, the same information is repeated in a different way in each book. This is a good thing because the repetition is an aid to memory, and the writer's focus is different in each book. Beginners who are eager to learn, should read as many of these books as they have time for. The club also has a great selection of bonsai picture books, particularly the books documenting trees shown in the annual Tokyo bonsai show. This collection is not available in book stores and is an excellent guide for design - your visual memory should be developed to remember how design problems were solved by other people.

The videotape library is not large - there are few bonsai videotapes that are good learning tools as compared to the available books.

The beginner's lecture at the start of most club meetings is invaluable. The speaker talks about bonsai activities of the season, and relates this to local conditions. Questions are encouraged.

Many meetings have a hands-on workshop. A tree and an instructor are provided, and the beginner is shown the first steps in designing a bonsai. Beginners should take as many workshops as possible.

#### Tools

In order to work on trees, tools are needed. Unlike books that can be borrowed, tools must be owned. If the intention is to continue in bonsai, it is essential to own your own tools. The basics are: side cutters, knob cutters, pruning scissors and wire cutters. Tools are available at stores selling bonsai, sales areas of bonsai shows and at meetings of the Toronto Bonsai Society. The total expense will be about \$140.



## Wire

Styling trees requires wire to control the shape of the trunk and branches. A serious beginner should have a selection of different thicknesses. The two kinds of wire most frequently used are:

### 1. Aluminum wire with a bronze coating

- very flexible
- comes in a large variety of thicknesses
- comes ready to use
- available only from a few sources
- 

### 2. Solid copper wire

- the equivalent thickness in copper is stronger than aluminum wire to be flexible, it needs to be annealed (heating it up and letting it cool)
- Annealing can be done with a propane torch or on a BBQ
- after being bent it becomes stiff again and difficult to reposition
- available from many sources

Either kind of wire will do the job. Putting wire on the branches of your trees is an ongoing process. As the branches thicken, the wire will have to be removed before it cuts into the bark of the tree. Branches are rewired repeatedly until they remain in the desired position.

Five different thicknesses of aluminum wire, each weighing a kilogram will cost a total of \$165.

## Trees

The way to learn about design and maintenance of trees is to own and work on as many trees as possible, preferably using a wide variety of species. Some members of the club have as many as 50 trees in pots. This number is beyond what most beginners are capable of maintaining (repotting, wiring, pruning, pest control, fertilizing, daily watering and overwintering). If trees are not getting the amount of care they require or if there is no time to develop their design, you have too many.

What happens when you have as many trees as you are capable of maintaining and still you get a few more? The less desirable trees in the collection can be thrown away, given away, or planted in a garden to continue their lives as garden shrubs. The problem with giving bonsai away is that the new owner may not be involved in bonsai, and you may find you are still maintaining the tree, but it is inconveniently located in another person's yard.

Workshops organized by a club are an inexpensive way to learn to design and wire trees. The plant material may not be of extremely high quality, but is good as a learning tool. Workshops are usually under \$50 and include helpful comments from a more experienced club member.

Nurseries are another source of trees. Picking a tree that has a great deal of potential requires skill. In most cases, the better your choice, the easier it will be to create a bonsai that looks good. Small nursery trees can be purchased on sale in the fall for very little as sometimes \$10 or \$15. Throughout the summer they may cost around \$50.

Collecting trees that are growing in the ground is another source. They may be found in the bush or as shrubs in your backyard.

Whatever the source, the problem is the same: to choose a tree that has bonsai potential. The more choices you make the more you develop your skills. The degree of difficulty you encounter in trying to bring out the best qualities of the tree you chose will give you feedback on the choosing process. The first trees that you work on may not end up being your best designed trees, but your design and wiring ability will improve with experience.



## Containers

Trees in development need an appropriate container. The plastic pots used by nurseries do not adapt well for bonsai. The drainage holes are sometimes on the edges of the pot, which makes it difficult to place screening in a position that will stop the soil from washing out. The shape of plastic pots is too deep for bonsai, but they can be cut down to the right height if there is no other alternative.

Trees that are in development will grow more quickly in an oversized pot, preferably one proportional to the final pot the developed bonsai will be placed in. Some people leave trees to grow in the ground until their trunk reaches the desired thickness. The difficulty with trees growing in the ground is:

- it is important to wire the main branches as early as possible, before they become too big to position easily
- trees in the ground are hard to wire and hard to design when not at eye level
- roots may grow very quickly and will need to be severely cut back when the tree is finally potted
- without digging it up, it is not possible to move the tree to a more desirable location if the climatic conditions become unfavorable

One way to deal with pots for trees in development is to make them out of plywood. They can be glued and nailed together. They should have blocks of wood as feet that keep the bottom of the pot elevated, allowing easy drainage through the holes drilled in the bottom of the box. The drainage holes are covered with plastic mesh just as in ceramic bonsai pots. The mesh is held in place with wire, or stapled in place. These containers are inexpensive to make, compared to ceramic pots, and can be custom-made to the size necessary. Nails or screws can be put in the sides of the pot as a place to attach wire used to hold down branches or secure the tree in the pot.

## Pruning and Wiring

In order to be able to prune a large number of trees without having to buy them, a walk in the forest will provide lots of shrubs to practice on. These shrubs will not be damaged by pruning, and will provide you with experience at selecting branches and removing ones that are not necessary for the design. Wiring can be practiced on small dead trees picked up from the forest and taken home, or on branches pruned from live trees. A great deal of wiring practice is necessary to develop your manual skills.

## Taking Part

If your aim is to learn about bonsai and to make friends in the club the following things will help with the process:

- read most of the books
- watch the videotapes
- attend the beginner's lecture that takes place at the start of many club meetings
- take some workshops
- buy your own tools and some wire
- get trees and work on them
- bring the trees to meetings and talk about them with other members
- attend the spring and fall shows and see what other members' trees look like
- put your best tree in the spring and fall show, no matter what stage it is at. Trees always look better in the show than in your yard
- have your trees photographed so you have a record of their development. After a few years it's a big surprise to see how bad they looked when you first got them and how well they have progressed
- volunteer to help out. It's a quick way to get to know everyone
- attend all the club events, particularly the Wednesday night visits to people's gardens in the summer.



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## Bonsai for beginners

from lecture-demo 'Bonsai for beginners' at the **BSUNY** (Bonsai Society of Upstate New York)  
January, 2010

by Arthur Skolnik

What distinguishes classical bonsai from potted trees (McBonsai I call them), is that the shape of the trunk and branch placement work in harmony to create a living work of art which has a named or recognized style, (formal upright, informal upright, cascade, etc.). Unless the tree has a style, it's just a tree in a pot. I started out briefly explaining 12 rules of design I consider essential in the creation of classical bonsai from nursery stock or collected material.

### 12 RULES OF BONSAI DESIGN:

1. All bonsai have a front, or best view. The Japanese say the trunk is the soul of the tree and when you can see the trunk, you get a feeling for the life the tree has had. The front should have no forward growing branches for  $2/3 - 3/4$  of its height.
2. The trunk and branches should lean forward slightly, toward the viewer.
3. A buttress or flare of the trunk at the soil line is a very desirable feature of age.
4. All trees should have taper; the trunk is thick at the bottom and gradually thins to the top.
5. When viewed from the front, the foliage at the tips of all the branches including the apex should be contained within the three lines of a triangle, more specifically a scalene triangle. And looking down on each branch, here too, the foliage at the tips of the secondary branches and twigs should be contained within the same kind of triangle.
6. The first branch, either a left or right one, should be positioned  $1/3$  of the way up from the bottom.
7. The remaining branches should alternate from side to side with a back branch between each pair of side branches (left, right, back, left, right, back or right, left, back, right, left back, or even left, back, right, left, back, right, or right, back, left, right, back, left).
8. The spaces between the branches should be widest at the bottom and diminish toward the top.
9. The longest branches should be at the bottom, the shortest at the top. This is how the triangle of foliage is created.
10. The spread of the branches should be about  $2/3$  the height of the tree.
11.
  - a. The branches at the apex should be arranged like a pin-cushion and be few and sparse because in the majority of varieties, the top is the most vigorous part of the tree. (Rounded tops are a feature of old trees, pointed tops are a growth characteristic of young trees.)
  - b. When working with thick-trunked trees, a good ratio of trunk thickness to height is  $1/6$ . (This is more relevant to advanced tree stylists).
12. Don't ruin a nice tree trying to make it perfect.

Beginners should use these rules as the first steps toward understanding how bonsai are designed. As reductionists, understanding the nature of complex things by reducing them to simpler or more fundamental things, they should all start here.

Bonsai art is enigmatic. We're not trying to duplicate how trees grow in nature; we're trying to recreate the impression of a full grown tree. I know you hate these, Harvey (Carapella, president of BSUNY), but I like this one...the goal of art is to give the experience, what is felt, not what the eyes have seen. Here are a few definitions I like. What's behind the art of bonsai is to reproduce the dignified beauty of a tree that has survived years of exposure to the elements. The art is practiced by training young trees to acquire and display the features of age while remaining small.



Growing a tree in miniature while capturing the feeling of its beauty and magnitude in nature is the essence of bonsai. Bonsai is a four-dimensional art, with life itself being the fourth dimension.

Each tree has its own best-design potential. The goal of any bonsai artist (in creating bonsai from untrained material) is to cull through all the options and uncover its best display of branch placement, trunk-line and buttress. But this process can be overwhelming for beginners - so many options, so many choices. What if I prune the wrong branches? Which branches do I remove? How much of the branch should I remove? Where's the front? What if the buttress looks great east-west but the best branch placement is north-south? And that gorgeous trunk line, how do I show it off along with the buttress and have branches placed perfectly?

Beginners should look at the design process as an amalgam, arrived at by putting the 12 basic rules into a blender, turning it on, and what comes pouring out is that person's interpretation and compromise between all the elements. Beginners should study good trees, identify the features they feel add the impressions of age, dignity, elegance and using the 12 rules for design, copy them. In other words, beginners should copy good trees; because otherwise there's too much to think about at first. Become really good at the mechanics of styling trees, focusing mostly on improving techniques and learning the horticulture required to keep trees alive. (If, after years of trying to keep trees alive and constantly failing, perhaps you should take a good look at stamp collecting as a hobby).

You've got the rest of your life to improve artistically and that road can be smoother if pruning, wiring and growing become close to second nature. It's a lot easier carving a stone sculpture if you know the right angle to hold the chisel and how hard to hit it with a hammer. A famous netsuke master-carver, while being observed working on a highly detailed masterpiece was asked by an onlooker, "How do you do that?" His reply, "I don't know, ask my hands".

"How do you know where to begin?", beginners often ask. I talked about the connection beginners need to make with the tree they are about to prune and wire (called 'a sense of place or space') and used the following analogy. When you take a trip to the beach with family or friends and start looking for a patch of sand to claim as your own for the day, you don't put your beach towel, chairs and picnic basket down as soon as you step onto the sand. You walk a little this way or that and wait to feel a connection to one particular spot. Sometimes you walk a little longer than other times but invariably, you make a connection and feel a space or place as 'just right'.

I didn't use this analogy but it applies too. If you've been driving a car in a big city for years, you don't mentally review the rules of the road every time you drive off. And once you're in traffic, you do don't spend a lot of time or energy interpreting what the signs and lights mean or navigating through traffic. It's second nature; you just do it because you know what works and how to make it work.

You've been in similar situations before and making it work is a matter of experience, second nature. Here too you are engaged with the space and place around your car and you just know what to do.

A client wanted me to prune, wire and repot his tree and asked if he could watch the process. Of course I didn't mind and the first two steps went well and without any comment from him. But when I was part way through repotting his tree he started to get upset with me at the way I was handling his prized possession. He thought I was too rough with it; but part way through his rant, he suddenly stopped talking, put his hand on his chin, looked thoughtfully upward and said that now he finally understood why new mothers get angry with him when he handles their newborn babies. He was an obstetrician and had his own sense of place or space in his field as did I in mine.

Most masters or fantastic tree stylists have two advantages over hobbyists: they are artistic (not to be confused with creative) and understand deeply the concepts of form, balance and harmony,



and they've worked on many, many trees. In Japan they say it takes 10,000 trees or 30 years to become a master. Having said that, I've heard of people who have been in bonsai 30 years but design trees as though they've repeated their first year 30 times.

What does all this mean? Practice a lot. Get used to deciding when to apply those 12 nested layers of rules I mentioned earlier according to what you think the priorities are, but remember to be flexible. No two trees are alike and decisions made and applied to one tree may not work on another. You'll need to learn when and how to compromise and figure out what your design priorities are. After a while, you'll start getting that sense of space or place with the tree and become open to the direction it will guide you in. Along with your own input you'll discover its best design. It takes patience and practice. The 'get acquainted' moments the beginner delicately navigates through when he first sees an un-pruned subject can be intimidating.

If you want to speed up your learning journey, try this. Buy three inexpensive (possibly sacrificial) trees and try three extreme, weird or unusual things to them. See how far you can push trees and have them survive. Even if they die, you'll still learn something.

I could have told the club about a tool I wish existed. A probe to be inserted into the decision making (bonsai lobe) part of a bonsai artist's brain. Wouldn't it be an ideal learning situation to listen to or watch the creation process unfold, all the decision making, sorting and weighing of options, virtual pruning, arranging of branches and assembling of elements into a perfect ethereal tree? That tool is probably not going to be available to us in the foreseeable future... which leaves one option... practice making those decisions. You won't kill the tree unless you prune the trunk at the soil line.

Often nursery stock is planted too deeply. I told beginners to remove this surface soil down to the point where one of two things happens. Excess soil may conceal a buttress or flare of the trunk (looks like an upside down funnel) and if the tree has one, it's a highly desirable attribute. If there is no buttress (common on young plants) keep removing soil until fine surface roots or a few stronger woody roots start poking through the new lowered soil surface, then stop digging. The goal here is to uncover a buttress, but going down too far and exposing too many fine roots can weaken the tree.

The tree I was given to prune, wire and use as the 3-D version of those 12 nested layers of rules was an Australian Brush Cherry (ABC). Aside from its small glossy leaves and ability to flower and fruit, (they are edible) it has an unusual characteristic. Most of the new growth appears (more or less) along four longitudinal lines at 3, 6, 9, and 12 (looking down on the trunk from above and looking inward at the branches). It's a tough tropical species capable of being severely pruned and will also withstand having all its branches removed, but not in winter. This drastic approach is not for the faint of prune-heartedness, but has the advantage (if all its branches have been removed) of producing dozens of new buds along those 4 lines I mentioned. (This drastic technique works well with azaleas too). The new buds which appear after total branch removal are a bit like marathon runners, many start out but only the strongest and most fortunate survive.

I told the club members, total branch removal (on ABC) is a great way of obtaining almost perfectly positioned branches because unnecessary buds are removed and the necessary ones are chosen because they follow a perfect branch placement pattern, (left, right, back, etc.). The technique seemed scary to most beginners and I opted not to use it at that time of year for horticultural reasons. Mid-winter's low light levels would not promote profuse budding. (Also the demo would have finished quickly). Instead, I pruned and wired it following 11 of the 12 rules of design I described at the beginning of my talk. Because I decided not to shorten the long side and back branches, again for the same horticultural reason, lack of sunlight, the foliage was not contained within a triangle. (The 2 best and free things you can do to promote budding are to provide air movement and sunlight). I talked briefly about growing ABC and finished pruning and wiring.





Lastly I told the club that classical bonsai is Japanese, but the art is practiced by people everywhere. Just as theatre or poetry are not exclusively Greek (and skiing is not exclusively Swedish). They created it and should be thanked, but we didn't adopt it without adapting it to our culture, otherwise it would have remained stagnant. There would not have been Shakespeare or Scorsese (or Alexandre Bilodeau, the first Canadian to win an Olympic gold medal at home, finishing first in the Men's Moguls Freestyle skiing final at the Vancouver 2010 Olympic Winter Games). As I said, beginners should copy existing trees to learn technique and practice making basic decisions; but once this initial stage is over, they should use nature as the example. Nature should be our inspiration. The basic rules are there to follow, but if you study the scales in music or colour charts in painting, you will slowly learn that bending the rules, combined with an experienced eye for balance, harmony, rhythm, proportion, scale etc., often means breaking the rules in order to create something artistic and creative, which also reflects your own personality.

In bonsai, you will never reach a destination, but the journey will keep you looking and learning. And after a while you will make that sense of place or space connection with trees.

One final note. Soon after learning and applying more and more rules of design and refinement techniques to bonsai, you'll find yourself looking at trees in the landscape and considering their potential for bonsai. Have fun looking! Remember: what is essential is invisible to the eye.

## Bonsai hardware: tools

by Robert Dubuc

Developing awesome bonsai is more of an art than a science, and you need the proper tools to create your bonsai if you intend to make it resemble what you had initially projected. Many different tools have been developed over the years specifically for bonsai.

The tools can be purchased either on the internet, nurseries, hardware stores, friends, and/or bonsai nurseries and local societies. Whether it makes sense to buy bonsai tools at the hardware store depends on your taste, and demand for quality implements. Bonsai is not about how much money you can save, and why not buy from someone who knows something about bonsai?

Purchasing bonsai tools can be expensive depending on the quality of the tools you buy, and where you buy them. However, lower priced tools will end up costing you more in the long run, since you will have to replace them more frequently. I still have most of my original tools from day one. I selected tools at mid-range cost, but that, again, depends on your comfort level and your budget. Keep in mind that, although you can interchange particular tools, there is a specific tool for each specific job.

Is there a set rule as to what you should have as a bonsai beginner in a tool set? No. But my first three choices would be a **concave cutter**, **knob cutter** and a **root shear**. I consider these to be absolutely essential. In my case, it was only once I knew that I had a strong interest in developing bonsai that I started buying tools. And I did not buy them all at once. I bought one or two pieces at a time and until I completed my tool kit. Today, I would probably purchase all my tools as a complete bonsai tool kit. I would not wait to think about purchasing a large trunk & branch splitter.

**Root shear:** *this versatile shear combines most of the strength of a regular shear with much better control; for small to medium cuts. Functions as extra heavy duty shears and as root shear pruners. Essential.*



**Knob cutter:** *designed for removing branch stubs from trunks and branches, as well as for removing roots. Can also be used as a root cutter. Do not use in the soil and branch areas simultaneously. Essential.*



**Concave cutter:** *designed to cut branches and trunk, leaving a small indentation in the wood. The wound it leaves behind will heal with less visible scars. Essential.*



**Root cutter:** *built strong enough for even the largest and oldest roots, they are essential if you plan on transplanting larger and/or older bonsai. They can also be used as a knob cutter. Not essential.*





**Twig shear:** long narrow body, great for trimming buds and reaching deep without disturbing the foliage. Not for general pruning as the blades will become dull sooner. Not essential.



**Wire cutter:** designed to cut training wire cleanly without damaging the bark. Not essential.



**Rake with spatula:** a three-pronged rake, good for loosening soil, combing roots, and cultivating compact soil surfaces for aeration and weeding. Spatula for tamping soil or moss. Not essential.



**Straight pliers:** helpful when wiring, removing branches, roots, and knobs from the trunk. Interchangeable with angled pliers. Not essential.



**Angled pliers:** used to crush branches strip bark and wood, creating dead wood (jin) and driftwood (shari). Not essential.



**Spatula with tweezers:** excellent for removing debris and delicate work. Tamp loose soil and moss with the spatula and use the other end as a single root pick. Not essential.



**Husk broom:** this brush is used to clean moss and soil surfaces. Not essential.



**Cut paste:** use cut paste when pruning branches, especially where there is a risk of sap bleeding. To soften the paste, roll it with your fingers. Not essential.



Graphics taken from **J-Bonsai**, with the permission of **Yoshihiro Nakamizu**.



## Wiring bonsai

by Arthur Skolnik

A bonsai is finished the day it dies, so there will always be the need for some pruning and wiring. Think of wiring as a tao, the Way of Wiring. The best wiring jobs often belong to the best trees. 'Best wiring' means effective and neat. Wiring a tree is not torture, trees don't have nerves to feel pain.

### WHY WIRE:

- to style the tree, enhance the shape and create the ideal image you've imagined.
- a tree in a pot is not a bonsai unless it can be recognized as one of the bonsai 'styles'.
- wiring (and pruning) create and refine the style.
- all aspects of horticulture involve control; pruners control growth, wire controls branch and trunk direction or movement.

### BENDING:

- a bent branch with wire on it will grow in the direction it is bent, similar to braces for teeth.
- wire does not prevent the tree from growing... be careful of wire marks in the growing season.
- a down-growing branch will take longer to 'set'.

### LONG AGO:

- before wire, rocks were tied to string to branches but crushed cells never healed in the wind.

### WIRE TYPES:

- annealed (heat softened) copper (will work-harden)
- anodized (coated) aluminum.

Let the tree become dry before wiring. The cells have less turgidity, (rigidity like old celery).

Before bending a big branch: 'v'- cut below, or above, (or if the branch is old, pull by hand; if young, use a knife or chisel and mallet) or pre-bend (massage) the branch to crush cells and make a longitudinal cut through the branch using a root-splitter or sharp thin knife.

Before bending, turn off the radio and stop talking. Listen to the pop before the snap.

Completely wire the tree before doing any bending/shaping.



## THE PROCESS BEGINS

1. Wire in the same direction as the desired twist. If twisting a lot, twist the branch as it is being wired.
2. Use the heaviest wire first, otherwise fine wire will become buried by thicker wire and may damage the trunk because it cannot be seen. This means always starting at the bottom.
3. Thickest wire for (a)trunk or (b)branches because they are near the bottom or (c)trunk and branch if they are similar in thickness.
4. Choice of thickness of wire comes with practice and experience. Bend the branch then bend a wire and see if it will hold. Use wire approximately 1/3 the thickness of what you want to bend. Sometimes 2 wires are necessary, copper vs. aluminum. The right choice of wire has slightly more strength than the branch.
5. Length of wire should be about 1/3 to 1/2 longer than the wiring you need to do.
6. Always wire at 45°. Less will stress tissues and more will not be effective in holding.
7. Don't cross wires. It looks messy and the inner wire may damage wood or the branch may move in the wind. A second wire should be parallel and touching the first.
8. Use 1 wire for 2 branches whenever possible. The goal is to use as little wire as possible. Choose 2 branches that are similar in thickness but far enough away (not too far) from each other to anchor at least once.
9. When wiring 2 branches, start by bending the wire in half (if wire needs are equal) apply the wire at 45°, anchor the wire on one branch, (wrap it once), completely wire the second branch, then go back and finish wiring the first branch.
10. The wire should be applied tightly but not too tight. Don't leave air space between the wire and the wood.
11. Don't squeeze leaves, needles or twigs between the wire and the wood.
12. Whenever possible, wire past a twig otherwise the wire may slow or stop water from getting to the end on the branch.
13. Don't bother wiring 'fleshy' parts unless the tree is being prepared for a show.
14. Always cut the ends of wire off wired branches. Don't leave dangerous hooks.
15. Use 'cages' for buds on pines for better bud directional control.
16. Relax and wire to the side you are comfortable with, but be careful your fingers are out of the way - especially on pines. Always be aware of where your fingers and hands are.
17. Don't shake the tree, be gentle. Remember there is a vital connection between the trunk and roots.
18. Hold the previous coil. If wiring up, hold down. Always use 2 hands.
19. If the plan is to bend a wire down, make sure the coil is above the bend, otherwise the wire will float off the branch and not hold.
20. If the plan is to create curved branches (or curved thin trunks), wire should be on the outside of the curve.



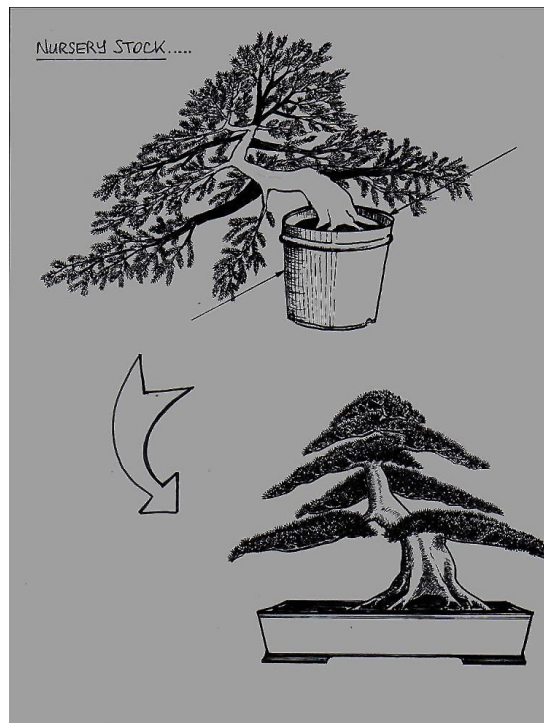
## Bonsai from nursery stock- reduction building

by Norman Haddrick

Everyone is not able to make the sometimes arduous, but always satisfying, journeys into the wild country in search of naturally shaped, dwarfed tree specimens for their bonsai collection. The most practical alternative for most bonsai enthusiasts is a visit to a local nursery or garden centre, where a browse through the available stock will likely reveal a suitable tree from which the basic structure of bonsai can be sculpted.

The biggest, single benefit of such a visit is the variety of stock from which to choose, and the selected tree provides the buyer with a few hours of design study and pruning practice, which can result in an attractive "bonsai-in-training". The first consideration, before choosing a subject tree;

- **Is it for outdoor culture with hardiness for the area in which you reside?**
- **Do you seek a species suitable for indoor culture over the winter?**



Whatever you decide, select a variety that has short inter-nodes, (the distance between one leaf node and the next), as well as small leaves or short needles, to be proportionate to the size of the bonsai.

***Major considerations related to the desirable features of bonsai design are the base of the trunk and the radiating root system.***

From these, a thick trunk rises, with good taper. These features are an immediate benefit, showing stability and age, and are not always easy to develop when growing in a bonsai pot. Having decided upon a species, it is wise to seek a variety with an abundance of branches. Preference to those with a heavy branch about one-third of the way up the trunk, and with thinner branches as they reach the top of the tree. The more branches to begin with, the greater the chance of finding branches where you need them in the bonsai design. Do not be over-ambitious in your first choice. Select a tree less than 18 inches tall. This should give you a beginning bonsai of about 12 inches or so after pruning and proportioning. From the mass of available branches and twigs the bonsai student sculpts the tree, removing the unnecessary limbs to leave the structure of the future bonsai.

***This initial hard pruning, subsequent re-growth and shaping, is often called "reduction - building".***

The tree will help the bonsai student by suggesting ideas for the best structure. This, from a combination of knowledge, of basic bonsai styling "rules", of trees in nature, plus the artist's imagination, will produce acceptable results.

*All emphasis by editor.*



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## Frequently Asked Questions

by Bob Wilcox

The two characters making up the word bonsai (pronounced bone-sigh), in both Chinese and Japanese, translate as tree and pot. This simple definition of bonsai as a tree in a pot is a good place to start, but for the serious bonsai artist there is much more. The artist is not creating the look of a shrub, or a sapling, but the illusion of a tiny ancient tree in a small container. This tree must be kept alive with horticultural knowledge and a great deal of day-to-day care. The treepis shape must be designed by the artist, with a schedule of development that can take place over many years.

### WHAT KIND OF A TREE IS A BONSAI?

Bonsai are created using a wide variety of plant species, both coniferous and deciduous. Tropical species, usually obtained from a nursery, are kept outdoors in the summer, and overwintered inside. When winter-hardy species are used, either obtained from a nursery or dug up from the wild, they are kept outdoors all year round, which provides the winter dormancy they need. One important consideration when selecting a tree is the size of the foliage. Small-scaled foliage will create a more convincing miniature tree. For instance, some indigenous Ontario maples have very large leaves, but the Japanese maple (*acer palmatum*) has smaller leaves and is more widely used as bonsai.

### HOW DO I KEEP A BONSAI ALIVE?

"I had a bonsai and it died." This is heard frequently. Most people do not try to find out what kind of care bonsai requires, assuming that the care is the same as for indoor tropical plants. This is not the case. Unfortunately, many retailers do not provide care sheets when they sell finished bonsai, but depend on the new owner to buy a book, or borrow one from a library. There are many good books on bonsai and most are written for the beginner, so the information is readily available. If the information becomes difficult to understand, it could be helpful to join a local club and ask the more experienced members about bonsai care. There is also a large number of websites devoted to bonsai. The largest number are joined as a bonsai ring at the site: <http://nav.webring.org/cgi-bin/navcgi?ring=bunjini;list>

### HOW DO I MAKE A BONSAI?

To become bonsai, plant material usually requires more work than just placing the tree in a pot. If the aim is to create the illusion of an old tree it is necessary to be aware of what old trees look like. One description of an old tree could be the following. It has a very large trunk that tapers gradually to small branches at the top of the tree. The roots at the soil line, where the trunk is the largest, radiate outward all around the tree, giving the tree great stability. The branches do not grow straight upwards, but hang down at their ends because of their great weight. The bark is old and textured.

Most nursery-grown plant material does not match this description. Nursery trees have been grown to be bushy and tall. They grow quickly with no taper to the trunk. Nursery trees are frequently repotted as they get bigger, with no concern for the original soil line, so they come directly out of the soil like a telephone pole, with the roots not showing.

Some people dig up trees from the wild, which usually results in a tree with an interesting shape compared to nursery trees. This obviously requires more time and energy than buying something from a nursery, and requires learning how to do it.

The bonsai artist tries to create the illusion of age using whatever techniques are available. The roots must be visible at the soil line, the structure of the trunk and branching must be revealed, and the height must be reduced in a natural looking way. Another technique requires branches and areas of the trunk being stripped of bark and bleached white to give the appearance of parts of the tree dying due to great age and adversity.



A technique for controlling the shape of branches involves wrapping the branch in wire and bending the branch to the desired shape. The best time to do this will vary, depending on the time when it will do the least harm to the tree, and be the most effective. Some trees are easier to wire in the spring before new foliage develops. The branch will be held in its new position until just before the wire begins to cut into the bark, at which time the wire is removed. If the branch does not hold its new shape, it is rewired until it does. In most cases, wire should be carefully cut from the branches with a wire cutter. Do not unwind wires as this could break off the branch, existing foliage or new buds.

### **WHAT'S ROOT PRUNING?**

When a newly-acquired tree goes through its first radical restructuring, the roots are also radically reduced in size. This is a good time to reduce the size of the roots because, with less foliage, the tree can survive easily with fewer roots. The parts of the root that provide the tree with nutrition are the tiny, fragile root hairs at the very end of the long, thick roots. The job of the thick part of the root is to provide stability when the tree is in the ground. Since bonsai are secured in the pot with wire, stability is not a problem, so the long, thick roots can be reduced in size without harm. The result is that root hairs are developed very close to the underside of the trunk, allowing the tree to be placed in a small pot without limiting the source of nutrients.

Subsequent root pruning happens whenever the tree is repotted, which could be every year, or every few years, depending on the rate of growth of the tree. This should be done in the early spring when the tree is at its strongest. Do not fertilize for 3 to 4 weeks after repotting. Do not let the roots go dry while repotting, and water well when finished.

### **HOW DO I KEEP IT SMALL?**

A tree is kept to the size and shape you want by pruning the leaves and branches. Pruning is also used to expose the structure of the tree, revealing interesting features such as a thick trunk or interesting curves. Pruning in the spring can make the branches produce buds closer to the trunk so the foliage will be more compact and the branches can be shortened to keep them in scale with the trees height. Quite often the desired profile of the foliage is a triangle, with a broad base. The apex of the tree is a soft rounded shape, characteristic of an old tree. The bottom branches are left the longest, so the upper branches do not block the sun.

### **WHY IS WATERING SUCH A BIG SUBJECT?**

Watering is a very important part of bonsai care. Since the pots are shallow, and the trees frequently are in direct sun, the soil dries out very quickly. During hot weather, trees are watered every day, sometimes twice a day. Large pots may have as many as 7 large drainage holes on the bottom, allowing excess water to run through. Trees are thoroughly watered until the water runs out of the holes. The holes are covered with plastic screening material to prevent the soil from washing through.

Trees have different water requirements depending on the species. For instance, pines will require less water than apples. To satisfy the particular water needs of the species, the growing medium is custom mixed, to regulate how much water should be retained. The pine may have a mixture of growing medium that is 1/3 soil and 2/3 crushed granite; the apple could have 2/3 soil and 1/3 crushed granite. This allows them both to be watered the same amount, but the water would be retained longer in the pot containing the apple.

### **IS FERTILIZING NECESSARY?**

Since bonsai are watered frequently, and the water washes through the pot, they require frequent fertilizing. Feedings vary from plant to plant, but generally a water-soluble fertilizer is applied every 2 to 4 weeks during the growing season at an appropriate strength. Make sure to check the directions on the package. Don't feed right after repotting (wait for 3 or 4 weeks), and don't feed if the tree is in a sick condition. Premoisten the plant soil first and never fertilize a very dry bonsai.





## **INSECTS & DISEASES**

Small trees potted as bonsai have the same problems as their bigger version, and all of the same treatments apply. Pests and fungus are dealt with using materials commonly available at commercial nurseries.

## **HOW DO I KEEP IT OVER THE WINTER?**

Tropical trees are taken indoors when the weather becomes too cold. They should be placed in an area with sun, or have artificial light provided. They need humid conditions and should be misted frequently.

Species that would naturally be outside in winter should overwinter outside even if they are in a pot. They require a dormant period for their health, and will not benefit from being indoors. In the Toronto area, the roots of bonsai left outdoors will need protection from the extreme cold, and (if they are coniferous) their foliage may require protection from the drying effects of wind and sun.

In Toronto, the air temperature can go as low as  $\lt -30\text{C}$ , but the temperature of the ground seldom goes below  $\lt -6\text{C}$ . This means that the roots of trees growing in the ground never get colder than  $\lt -6\text{C}$ . If trees in pots are kept on a deck or shelf for the winter, their roots will go to air temperature, which could kill the tree. To protect outdoor bonsai, what has to be done is to duplicate what happens in nature, and prevent the roots from going below  $-6\text{C}$ .

This can be done by burying the tree and the pot in the ground with soil covering the top edge of the pot by a few inches. The soil in the pot will freeze and the tree will be eventually covered in snow, which will keep it moist. In the spring, the melting snow will water the tree.

An alternative to burying trees is to place them on the ground in a shed. At the first snowfall, gather buckets of snow and cover the trees almost to the first branch. The snow will freeze to the ground and keep the tree at ground temperature. In the spring make sure that the soil in the pot does not dry out when the soil has thawed.



## What is Bonsai Soil?

by Mike McCallion

Bonsai soil is just the term used for a whole range of growing mediums for bonsai, which may or may not include any actual soil. The composition of a bonsai mix varies, but there are three main considerations:

### **SPECIES - WATERING ROUTINE - LOCATION**

**Species** - different have different needs for moisture retention. Hardier species can generally take drier conditions, as can species adapted to desert conditions. Deciduous trees prefer more moisture than conifers.

**Watering** - If you water everyday, you need good drainage. If you think you will miss days regularly, you need better moisture retention. In all cases the soil can't be soggy. "But why isn't it the same as the planter boxes and potted flowers?" Because trees are different from flowers. The roots of woody plants are not the same as flowers and vegetables.

**Location** - If it rains a lot where you live, you need better drainage. If it is very sunny, very hot, or very windy, you need good moisture retention. Remember that a sheltered corner of your yard can be as much as 5 degrees warmer or colder than other spots.

So what exactly is good drainage? Primarily it has to do with particle size. If the soil particles can pass through standard window screen, they are too small. Small particles clog up the spaces in your soil. If water doesn't flow freely through the holes in the pot, it isn't draining. If the potted tree is put in a bowl of water, up to the lip of the pot, it should fill rapidly with water from the bottom up. The only other important issue with screening is to keep the particle sizes as similar as possible. I generally separate my soils into smaller size and larger size particles, using large soils for large trees, and small soils for small trees.

I have noticed two very distinct types of soil, which I refer to as "old school" and "modern". Many of the experienced bonsai growers in Canada and the northeastern U.S. have a soil mix which is made of smaller particles (around 1/8"), and a significant amount of organic matter. These people grow healthy and very well maintained trees, and this material is also a great medium for mosses on the soil surface. A more recent trend seems to be to use coarser materials (closer to 1/4"), with less organic matter. This method also creates healthy trees. Personally I am moving towards the coarser mix, but this is primarily because of the availability of appropriate coarse components, and the fact that I find it easier to repot trees in this type of mix.

Well-draining soil can retain moisture - the issue is not retaining moisture in the space between the soil particles, but on and within the particles themselves.

Very sharp, jagged particles contain a lot of nooks and crannies which are where moisture is captured. It will keep the roots humid, without creating a soggy environment. One of the negative aspects of sharp particles is that the material tends to chip apart and break down over time - you need other hard particles to maintain the structure of the soil and keep it from collapsing. Construction sand or any coarse grit can provide a stable structure.

With all of the watering we generally do on our trees, nutrients leach out of any soil very quickly. Hard particles don't hold nutrients very well - so we need some sort of spongy material to hold nutrients. Fired clays and most organic components can hold a significant amount of nutrients.

### **Your soil then needs to have several elements:**

- Hold moisture
- Hold nutrients
- Drain properly
- Maintain its structure



The materials available have varying amounts of each of these, and your soil mix should incorporate a balance of each.

Deciduous trees generally need more water retention, more nutrients, and more stability. Coniferous trees generally need more granular and less nutrient rich soils. Pines and some other species have their own preferred soils.

**Basic mixes:**

A very basic mix would be thirds of organic (A), sharp (B), and sturdy particles (C).

- A - 1/3 - black earth, screened peat moss, screened fir bark
- B - 1/3 - turface, pumice, lava rock, crushed quartz or granite
- C - 1/3 - construction sand, haydite, perlite, turkey grit

This type of mix works well for most deciduous species. Reduce the percentage of organics (A) for conifers to 1/4 or 1/6. For pines, reduce it to about 1/10. The other components can be in equal proportions.

The specialty component Akadama is a Japanese fired clay. There are many bonsai growers who use it almost 100%. It generally has characteristics of the other sharp stones and the organic components. It could be used in the above mix as a 1/3 to 1/2 component, reducing A and B each by half.

The most important thing to keep in mind is always drainage of the soil. Your roots want a humid environment where they can breath - too much moisture and they will suffocate, too little and they will dry out. If after you repot your tree, you find that the water doesn't flow through sufficiently then check your mix. Be sure it is open and fairly free of dust and small particles, and add more coarse material to it if needed. Then repot the tree again. The damaged and newly forming roots will appreciate the extra breathing space.

If you are still unsure, bring your soil mix in an ask some of the members, and be sure to look at the soil in the trees that are brought in to the regular meetings.



## Wintering Bonsai

by Mike Roussel

I would say that the most important aspect of bonsai cultivation is simply keeping the trees alive. It really is pointless to learn how to style your trees if they are just going to die over the winter. I have had my share of "permanent dormancy" so I spend a lot of time making sure my trees are adequately protected during winter. I like to err on the safe side. I have read many articles on wintering bonsai and there are tons of great ideas out there so instead of reiterating what others have said I will simply share with you what I do with my trees, providing some tips and tricks I have learned on the way.

We are very lucky here in Eastern Ontario because we can grow virtually any species suitable for bonsai cultivation. It is important however to note that not all trees can be treated equally because of the different native climates in which they normally grow. To make things simple, I group my trees into three categories: tropical/indoor, tender, and hardy.

These days, if I'm in doubt, I look up the tree on the internet (use the full Latin name).

Tropical trees are typically grown in a frost-free environment. Below are some examples: fig, fukien tea, olive, jasmine orange, pomegranate, tree of a thousand stars.

These trees will drop their leaves and die if they are hit by any significant frost and most cannot stand even cold temperatures (<10°C). As a result, these trees must be brought inside in the early fall. Keeping tropical trees happy and healthy requires regular watering and feeding all winter (although diminished), as there is no true dormancy period. You must avoid any nasty drafts from an open window or door. Typically you will have to put these trees in a greenhouse, a sunny window (south facing is the best) or you will have to provide artificial light. Keep in mind that you must continuously turn the tree so it receives light on all sides since you now have directional light and as we know, plants grow towards the light source.

Be very careful to check for bugs. Spider mites really like the warm, dry environment of a home and will multiply quickly if left unchecked. One thing that I do periodically is to take my trees into the shower and hose them down. You can use a sprayer but be sure to get the undersides of the leaves wet, where those nasty critters hide. The trees love it; the bugs hate it. If you use insecticide make sure you wash it off at some point to avoid the buildup. Dust is an issue too.

Don't be too much in a hurry to take your tropicals outside in the spring. Typically it is safest to keep them in the house until all chances of cold evenings are over such as late May or June. It is possible to acclimatize them earlier by putting them out in the morning and bringing them in at night.

Tender is a relative term and basically means that if your tree is exposed to the worst cold possible in your area, it will die or be severely damaged. If you live in extreme southern Ontario you might categorize certain trees as hardy whereas someone living in northern Ontario would see it as tender. The best way to determine what is tender is to check the plant hardiness zone map for your area and the trees in question. In the Toronto area where I live, I categorize the following trees as tender: Japanese maples, trident maple, cedar, hornbeam - Korean and Japanese, Chinese quince, cryptomeria, crape myrtle, pine - tender varieties like Japanese black and Japanese white, azalea, zelkova, juniper - tender varieties like "San Jose" and "Hollywood"

I have read about and heard of some really fancy and then low-tech ways of taking care of these types of trees. I sectioned off a part of my garage and insulated it so I can control the temperature better. I bring my trees into my "cold room" when all the leaves have fallen or we start getting hard frost, when I pick them off (this does not apply to evergreens of course). I clear any other debris before I put them on shelves. I leave the moss sometimes, but it is better to take it off and treat it as hardy.

I like to keep the temperature hovering around 0°C (plus or minus 5 degrees) and have had little or no dieback. I use an oil heater instead of a heater and fan combo because I want to avoid



directing heat on any trees in particular. I keep an even temperature in the room by using a separate fan hanging from the ceiling, pointing down and to one side. It is on the ceiling to force the warmer air downward and to the side to create a cyclonic circulation of air. Air circulation is important to avoid fungus problems and provide a "wind" to the trees. Since my trees are not frozen constantly I must ensure that I check for dryness periodically and water when needed (typically bi-weekly or monthly). Since I don't have a drain, I sometimes bring them outside on warmer days so I can soak the soil properly. Make sure the water is cold so you do not wake up your tree and make sure you allow the tree to dry somewhat before watering again to avoid fungus problems and root rot.

The tricky part with tender trees treated in this way is that they can wake up early. In late winter/early spring I turn off the heater if it starts to get close to 0°C. If the buds break and start showing their leaves, I keep the trees in a window in the main garage. When we have warm sets of days in April and I bring them outside during the day and then inside during the evening until the threat of frost is over (frost may kill the new leaves). Realistically, I often keep them in the garage for days on end in April when there is frost at night. Alternatively, some types may be brought inside the house at this time but then must be treated as tropics. Other things to consider is getting some mousetraps and buying a thermometer because most heaters come with a low-high setting, not a specific temperature setting.

The hardy types are the easiest to care for and allows for long winter holidays :) These trees will survive the worst winter temperatures (in your area) so they don't need to come inside or even be protected, other than planting them in the ground (pot and all). You will find that locally collected trees and those you can find at the nursery (outside section) are hardy. One of the first bonsai-beginner mistakes is to keep a hardy tree inside for the winter (even worse, in the basement with intermittent light). The plant's nature is such that if it isn't exposed to a severe winter, it will weaken and die. Examples are: birch, American hornbeam, hawthorn, beech, maidenhair tree, juniper, larch, apple, pine - mugo and scots, and our three local varieties, white cedar, hemlock.

I winter these trees either exposed to the elements or in a shelter that I build in my garden. I started building a shelter each year when one of my trees lost an important branch due to a heavy, wet snowfall. Basically, I build a "post and lintel" structure with a solid roof. I do this by first digging in 4 posts, and then I hammer on the lintels (the side pieces), making sure it is all level. To finish the shelter, I add the roof boards. Since this is a temporary structure I make sure I do not hammer in the nails fully so it is easier to remove them in the spring. Lastly, I wrap it all with plastic (white is best). Mind the wind by weighing down or stapling the plastic to the structure well and keep it taught. You will need a door. I suggest stapling a wrap around piece of the plastic wrap to a board the length of a post and temporarily nailing it to the post.

When it gets really cold, around the same time I take in my tender trees, I start burying my hardy trees. I wrap the tree pots in fabric (something breathable and not a coarse weave) and dig them into the ground slightly up the trunk. Wrapping them means that I can dig them out of the ground in the spring, take off the fabric and it is like they were never in the ground! It also keeps the ground soil out of the pot. Note that pots that have a lip that turn inward or aren't high-fired may break so it is best to take the tree from the pot and wrap it. I put the big trees on a board so I don't disturb the roots too much. One thing to be sure of is leveling the soil properly so you don't end up with excessive ice buildup around the tree due to bad drainage. Lastly, I spread mothballs over the ground to discourage rodents, and then I close up the structure. The only time I open it up again is when we get that special "fluffy snow" which I shovel in to add more insulation and moisture. Make sure you spray it well so you don't damage your trees and use common sense with the amount. Be mindful to open up the structure when it heats up in the spring so the trees don't break dormancy too early with frozen roots!

## **CONCLUSION**

Now you are armed with some information on how to over-winter your bonsai trees. Luckily the weather has been mild this year so you still have time to get it done but you better hurry!



## Overwintering Bonsai Artists

by David Johnson

During the winter period, our temperate trees get their beauty sleep when they become dormant but bonsai enthusiasts don't have to. Sure it is convenient and even necessary to take a break or go on a vacation. However, while our trees are hibernating, we should be plotting. The winter break can be used to make plans for our trees by doing a little research.

### BOOKS AND MAGAZINES

We should try to learn all we can about our particular trees. A good source is the Toronto Bonsai Society (TBS) library. There is a wealth of information in the magazines and books. Some specialize on certain trees, others are more general. For example, one issue of the British **Bonsai Magazine** has had articles on Scot's pine and English hawthorn, both trees that are owned by members. **International Bonsai**, in publication for twenty-two years, must have covered most everyone's tree at least once and probably twice.

The Japanese bonsai exhibition books provide a wealth of design ideas. Sometimes we get stuck on what to do with our trees. Thinking about the design helps, but books can provide new ideas. The more books you look through, the greater the likelihood of finding something to inspire you.

For those who have already read those books and magazines and have seen the videos a while ago, it is amazing how much more you will get out of them the second or third time around. This may reflect the point Walter Pall made about the "generations" bonsai artists go through as they learn more about bonsai. The books and magazines which we have already read become clearer - sometimes surprisingly so as we leap from one generation to the next.

### PLANS AND SKETCHES

Like any good student, books are not just read and then put back on the shelf. We could take notes, jot down references, formulate plans and make sketches of those plans. A bonsai record sheet is invaluable because it includes basic information about the tree in addition to an annual and monthly breakdown of everything you have done or plan to do to your tree. This file can also include photos of your tree as it progresses and notes of any brilliant ideas you may have for your trees.

Drawing your tree (if they have been put away for the winter you could use photos) gives you a better feel for your tree. The drawing doesn't have to be a Rembrandt. A stick drawing is better than nothing. After drawing the tree as it is, draw the tree as you want to redesign it and possibly its future look. These drawings also have a practical application. Place them in front of you as you work on your tree next spring and use them like blueprints. One has less chance of going off the beaten track if you have a road map in your hands. I can vouch for that from personal good experiences and bad ones.

Concrete ideas and questions that emerge from your research can also be the basis for discussions with other members who can draw on the decades of bonsai experience in the TBS. Plans can also be made for spring wiring and repotting or matching a specific tree with a number of container options.

### CLEAN-UP

Winter allows for a general clean-up and preparation of your tools, wire, hardware, pots, soil and other accessories, chores that we neglect during a busy growing season. Tools get special attention although their maintenance should really be on a daily or weekly basis.

### PLAN YOUR WORK, WORK YOUR PLAN

Our trees can only improve by taking positive action. Progress occurs on the basis of an informed opinion. A little research and planning can go a long way towards improving our trees. But if this planning doesn't answer all the questions, at least it will be the first step towards finding something you can begin to work with.



## Your Bonsai Calendar for Zones 5-6

by Dierk Neugebauer

Many publications in our library deal with various growing, styling and maintenance tips, but are not usually directed to our calendar or growing climate. I would like this column to be a little more practical for our members, as well as a little more personal.

The Monthly Checklist Summary							
Month	Fertilizing	Pruning	Wiring	Repotting	Watering	Pest Control	Other
March	none	larch as buds swell	larch	yes	start to check for moisture	lime sulphur dormant oil spray	check for swelling buds
April	high nitrogen 20:20:20	all EXCEPT pines	all	all	start to check for moisture	lime sulphur dormant oil spray	nitrogen (first # in formula) for green growth
May	high nitrogen 20	all EXCEPT pines	all	yes	water regularly	insecticidal soap for aphids	watch for aphids
June	high nitrogen 20:20:20 organic	candles on pines	all	yes	water regularly	fungicide or weak baking soda solution	start to check for powdery mildew
July	nitrogen 10:6:4 organic	leaf prune if appropriate	minimal	no	water regularly		phosphorus (second # in formula) for roots
August	nitrogen 10:6:4 organic	minimal	minimal	no	water regularly		potassium (third # in formula) for fruits
September	no nitrogen	needle pluck pines	yes	no	water regularly	pesticide soil drench for indoor trees	plan overwintering site
October	none	none	none	none	check moisture	plan mouse control for winter	put trees to rest late in month & protect
November	none	none	none	none	check moisture	check mouse traps/poison	replenish is necessary
Winter	none	none	none	none	keep moist	check for mouse damage	put trees to rest for winter



## Care of Bonsai Tools

Written, Illustrated, and First Published in the 1960's by John Patrick  
of the New Orleans Bonsai Society  
First Reprinted in the Journal in March, 1987  
Edited by Norman Haddrick and Republished in the Journal in Jan. 1997  
Short version for Beginner Package 2011

### INTRODUCTION

Routine maintenance and care is essential if you want the best performance from the hand tools used in pruning and shaping your bonsai. During normal use of your bonsai tools, sap, pitch and dirt accumulate on the blades; cutting edges get nicked; and rust forms from the accumulation of moisture in the sap and dirt.

As the cutting edges become dull, greater pressure is required to make a cut. The cuts are not clean, and tearing and crushing of cells occurs, causing damage to your trees. Severe damage to your cutters can also occur. The combined effect of increased cutting pressures, dulled edges and accumulated dirt causes the blades to separate. The wedging pressures can be enough to break the tip of steel branch and root cutters. Therefore, good tool care should become a daily practice.

### TOOL CARE RECOMMENDATIONS

If you follow a few simple rules the life of your bonsai tools will be increased and the time between sharpening will be extended, making your hobby more enjoyable.

- Examine your tools before and after using and look for bent tips on scissors, nicked cutting edges, dirt accumulations and rust. If any of these conditions exist correct them before using the tool.
- Do not use your branch or root cutters when cutting roots in a soil mass. Sand or small stones in the soil will nick or break the cutting edges. Clean the dirt from the roots or use pruning shears, which are not only tougher and more able to take the punishment, but are a lot easier to restore.
- Do not drop your tools or throw them down carelessly. This can bend or break the cutting edges and is the most common cause of tool tip failures.
- Do not overload your tool. Use a larger cutter or make the cut in small, easy stages.
- Protect the tips and cutting edges of your bonsai tools when they are not in use. Store them separately in a pocketed cloth roll or compartmented tool kit.

### MATERIALS REQUIRED FOR TOOL RESTORATION

Pruning and cutting tools can be restored to good working condition by cleaning, sharpening and oiling. The materials required are easily obtained:

- Turpentine or Rubbing Alcohol
- "Scotchbrite" or "S.O.S." Cleaning pads
- Emery Paper - grit #320 or #400
- Emery paper - grit #240
- "3-in-1" or "WD-40" lubricating oil
- Oil stone, Arkansas stone, Washita grade, Paper towels





## **CLEANING OF TOOLS**

Cleaning of tools after use is relatively simple, IF you have carried out your routine care program. The first step is to wipe off all dirt and grit. Next, the tree sap that remains can be removed by wiping the cutting blades with a damp paper towel. Pitch from conifers may have to be removed with rubbing alcohol or turpentine. When stubborn stains or light rusting is evident, rub the blades with a damp S.O.S. Cleaning pad.

To remove severe rusting use the #320 or #400 grit emery paper. Remove all the dirt, rust and sap off with the tool in a dosed position first. Do this to protect your fingers from the cutting edges and sharp tips.

You will find it easier to work when you support the tool on a solid surface. When all the exterior rust, sap and dirt is removed, open the blades, clean the faces of the cutting edges. To clean rust from the inside faces of a scissor type tool, lay the emery paper on a flat surface and rub the inside of the blade while holding it flat on the emery paper.

When all the tool surfaces are bright, wipe off all the cleaning dust and grit. Oil the tool all over with a light coating of oil, remembering to oil the pivot joint and exercise the joint several times to penetrate the pivot and drive out dirt and old lubricant. This is especially important on rivet type joints but, it will prevent rusting and reduce wear on all joints.

Now your tools are ready for storage or for sharpening.

## **SHARPENING BONSAI TOOLS**

There are two types of bonsai tools, each requiring a different approach to sharpening:

- 1) Those with a scissor - cutting action, e.g., trimming and pruning shears.
- 2) Those tools with a mandible (biting) action, e.g. branch, root and "knuckle" cutters.

### **SCISSOR TYPE BONSAI TOOLS - DEBURRING**

To sharpen scissor type tools, first check that the blade tips and edges are not burred. Any burrs should be removed before sharpening. To remove burrs, put a small amount of light oil on the oil stone. An equal mix of light oil and kerosene is ideal for honing. The lubricant is used to carry away the minute metal particles removed during the honing process.

Now, open the scissors and lay the stone flat on the inside of the blade (Figure 1). Push the stone over the blade, making sure that the stone remains flat, until the burr is removed. Turn the scissors over and stone the opposite, inside face, if necessary. Excessive or unnecessary stoning can eventually deform the cutting faces.

Depending upon the size of the tool and the shape of the oil stone, as well as your adeptness in handling them, you may prefer to reverse the process of moving the stone over the tool, to moving the tool over the fixed stone. A little practice will help you determine which is best for you.



### SCISSOR TYPE BONSAI TOOLS SHARPENING

To sharpen scissor type tools, open up the blades with the outside face up and the cutting edge toward you. Support the scissor firmly on a bench or table top. Place the oilstone over the outside face of the blade, (figure 2), at an angle equal to the original tool cutting angle.

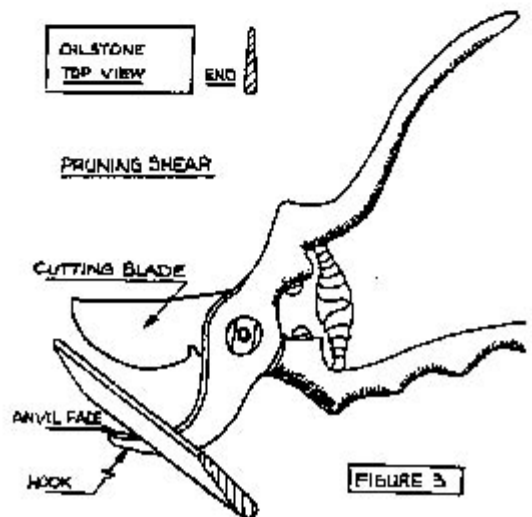
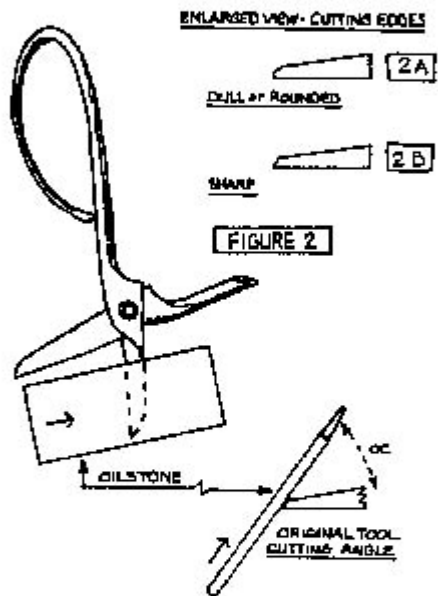
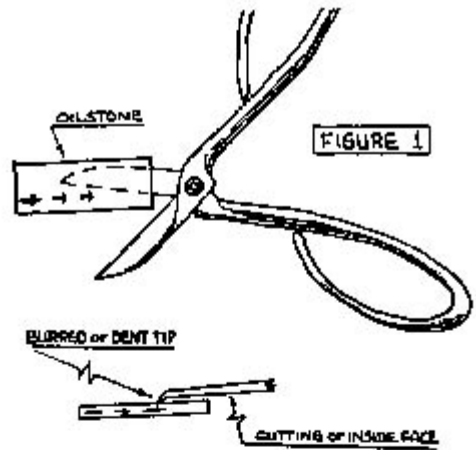
Cutting angles may differ, depending upon the type of cutter and the manufacturer. Therefore, it is most important to maintain the original cutting angle of each different tool, as closely as possible. Push the oilstone in the direction of the arrows shown in figure 2, over the cutting edge until all the nicks are removed. Examine the cutting edge under a bright light.

If the edge is dull, (figure 2a), you will see a highlight reflecting off the cutting edge and if you gently pull your finger across the edge, it will slip with no drag. However, the sharp cutter, (figure 2b), will not reflect a highlight and if you gently pull your finger over the edge you will feel some drag. Caution: do not pull your finger along the cutting edge to test the sharpness! If the edge condition is as described for figure 2b, your blade will be sharp.

Turn the scissor over and proceed to sharpen the other blade as previously described. Only three or four strokes of the stone should be necessary. Make certain that you are holding the stone at the same angle for each stroke, as changing the cutting angle while stroking the stone will continually "round" the edge and will not sharpen the blade.

When you have completed the sharpening of both blades, wipe off all the stoning grit, oil the tool and wipe off all the excess oil with a clean paper towel. In the process of wiping off the excess oil, leave a fine coating all over the tool to protect it from rusting.

If your pruning shear, (figure 3), has only one cutting blade, sharpen it as described above. The anvil blade should be cleaned and examined for burrs. Remove the burrs from the inside face as described above in figure 1. Wipe the shears clean and oil.





### MANDIBLE TYPE BONSAI TOOLS SHARPENING

The mandible type bonsai tools have a biting action, similar to your teeth. The cutting edges, when closed, should be in a straight line contact, (figures 4 & 4a), or a curved line contact, (figure 4c). If they are not in line contact, when you cut a branch or a root, the cut will be ragged or incomplete.

The first thing to do is to clean the cutter as described under cleaning of tools, then check for the line of contact, (figure 4b), by holding the cutter up to the light in a closed position. If any light shows through, the cutting edges are out of line. Nicks in the cutting edge can also be seen at this time.

Sharpening will generally not correct out of line and nicked conditions. To re-align cutting edges and remove small nicks, place a six inch strip #240 grit emery paper, about half again as wide as the cutting edges, between the cutting edges. (Figure 4d).

With very light pressure on the cutting jaws, pull the emery through to hone the cutting edges. Do this several times then turn the emery cloth over so it is facing the opposite cutting edge, and pull it through several times. Repeat this process until the nicks are removed and the cutting edges are in line.

If only one cutting edge is nicked and the contact line is good, only the nicked edge has to be emery cloth honed. Any time this process is performed the tool will have to be sharpened.

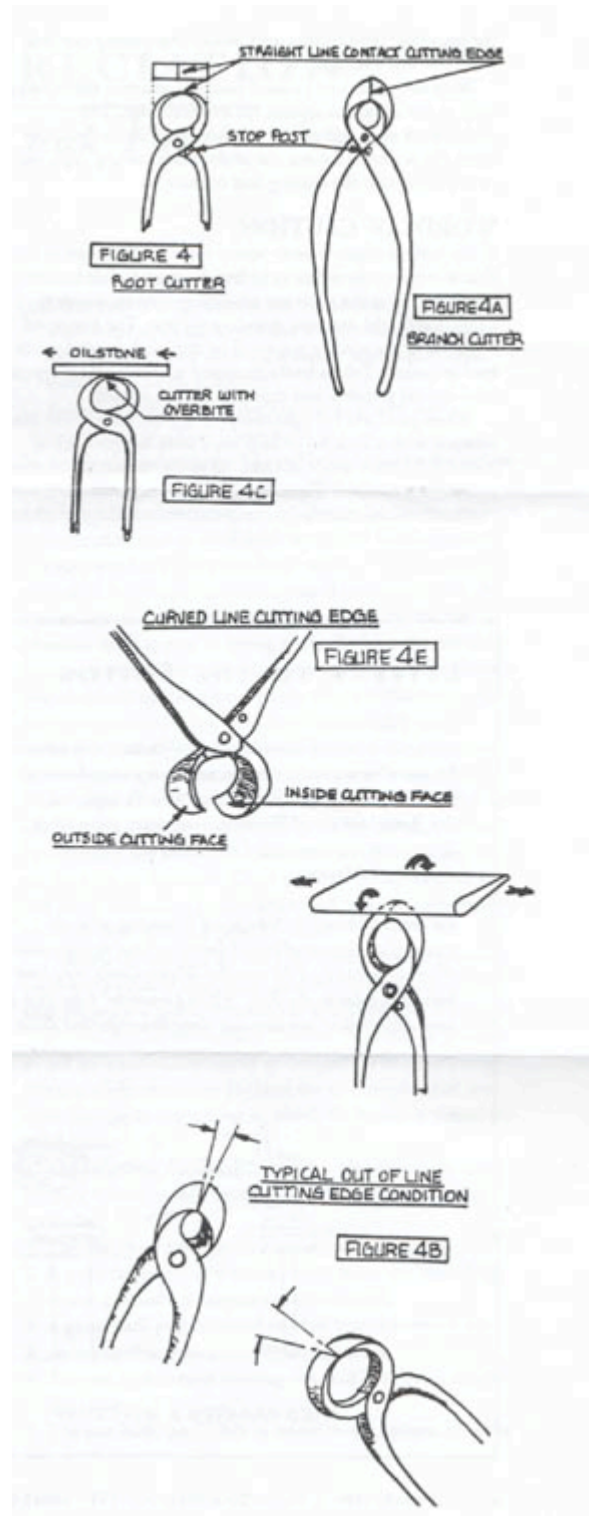
In addition, after this process has been performed, the cutting edges may not close completely, because of the "stop post" on the handle of the cutter. (See figures 4 & 4f). If this condition occurs, grind or file a small spot off the cutter handle until you get cutting edge contact. Do not file/grind the stop post.

When proper, cutting edge contact is achieved, do not have more than three thousandths of one inch clearance between the stop post and the handle, as this will cause excessive pressure to be applied to the cutting blades, which may cause breakage or failure of the cutting edge.

When sharpening mandible type bonsai tools, place the cutter in a closed position on a bench with the outside face up. Place the oilstone on the outside face of the cutter and slide the stone over the face and along the curved cutting edge. (Figure 4e).

Repeat the stoning motion until both edges are sharp. Do not worry about the cutting angles of the tool as they are established by the inside cutting faces, as shown in figures 4e & 4f.

If one cutting edge is still flat, from the emery cloth honing



process, open the cutter and continue to sharpen that edge only. This should be done with care in order to maintain a cutting edge alignment and prevent the condition shown in figure 4b.

Both cutting edges of the mandible type cutting tool must be sharp. If one edge is dull, it will act as an anvil and will not give a clean cut.

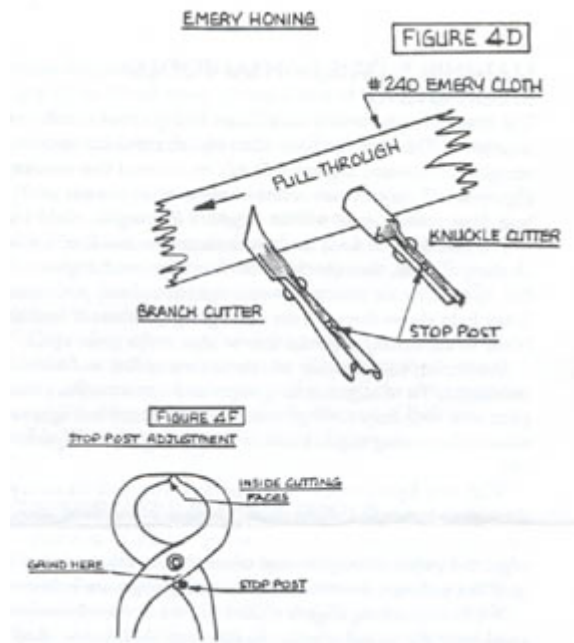
Generally, branch pruners, root cutters and "knuckle" cutters have an "overbite". (Figure 4c). The overbite is normal for mandible type cutters, and proper sharpening care will maintain this overbite.

With the cutters in a closed position, sharpen the exposed edge in the direction against the overbite edge. The underneath edge will not be touched by this process. Now open the cutter and stone the underneath cutting edge, taking care to maintain the cutting line contact.

**WORDS OF CAUTION:**

If the cutting edges of your bonsai tools are damaged so badly that they require the edges to be bench ground, do not attempt this yourself, as the tools are too lightweight to absorb the heat generated by the machine grinding process. The tempered hardness of the cutting edge will be removed, rendering the tool as useless. Take a badly damaged tool to a tool sharpener, with special grinders and experience to do the job.

When you have finished sharpening your tools, clean your oilstone with a little oil to help wipe away the particles of metal. Add a few drops of clean oil to the surface of the stone and store it covered. These simple steps will retain the sharpness of the stone's grit, keep the surfaces flat and prevent glazing.





### Bonsai Record

**Tree No.**

Botanical Name: \_\_\_\_\_  
Common Name: \_\_\_\_\_

**Acquisition date:**

**Source**  Purchased from: \_\_\_\_\_ Cost: \_\_\_\_\_  
 Collected from: \_\_\_\_\_  
 Propagated from:    Seed     Cutting     Graft     Layering

**Age:**            estimated \_\_\_\_            actual \_\_\_\_

**Dimensions:**    height: \_\_\_\_\_            trunk diameter: \_\_\_\_\_            canopy width: \_\_\_\_\_

**Initial form /style:** \_\_\_\_\_            pot color: \_\_\_\_\_            pot shape: \_\_\_\_\_

### Care info

**General information / light requirements / zone**

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**Potting**

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**Feeding**

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**Wintering**

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**Insect control**

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