

Black Pine – Needle Thinning

by Randy Bennett

Trying to learn proper pruning and thinning techniques for Japanese black pine is confusing. The reason is that there are so many variations of the techniques. That is why you can read ten articles on how to prune and needle-thin a black pine and come away feeling like you have read articles giving advice for 10 different species (including perhaps the one you're reading now)....and that is very confusing.

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What is necessary to understand is that the HOW is not nearly as important to learn as the WHY. Because if you understand the WHY, then the HOW really doesn't matter. That is why there is only one WHY and about 130 ways of HOW. What I hope to do in this article is help clarify the WHY of needle thinning. And actually, if you understand the WHY for needle thinning, you can understand it for candle pruning as well, and that is half the battle. Then you can read any article and begin to understand why they are suggesting the method being used. You can look at photographs of the material used as the example, take note of its' stage of development, and understand the reason they are suggesting the method being applied.

Unfortunately, most instruction in bonsai seems always to be centered on the HOW. And because we are so conditioned to learning HOW to apply a certain technique, or HOW to achieve a certain result, we are brought to a stage of what Wayne Greenleaf would call "bonsai confusion" because there are so many ways of achieving the same result. We don't know which HOW to use, or which one is best. There seem to be parts of this one in that one, and this one over here has elements of these three over there. And the more articles I read, the more confused I become.

That said, let's take a look at needle thinning and I will try to clarify the WHY. I begin with needle thinning because it utilizes the same principles as candle pruning, but is not as complicated. And yes, there are those out there who will say that candle pruning does not have to be complicated, just do this and then do that, but then we are back to promoting HOW and not WHY and we once again become confused when the next person we meet shows us a different HOW.

October through November is the general time of year to do needle thinning on Japanese black pine as well as our Louisiana natives such as slash, loblolly, spruce, and shortleaf pines – which are also treated as two-needle pines. We perform this task at this time of year because this is when pines are losing last years needles anyway – we are simply assisting what nature intends and structuring the process. Here in the New Orleans area, I prefer the 1st through the 15th of November due to our climate. Cold weather is usually pretty late getting to New Orleans (if we have any at all). As a result, deciduous trees are still hanging on to their leaves into December, and many of the pines have not dropped their needles. In fact, they tend to hang onto them quite a while.

Needle thinning is the process of removing last years needles and often includes removing some of the current years needles as well. Needles from the previous year are usually starting to lose their color and many fall from the tree on their own. In point of fact, the fading needle color indicates that they are no longer viable producers of food for the tree, and may be at a stage where the nutrients and water they are receiving is disproportionate to the amount of food they are producing and are therefore a detriment to the health and vigor of the tree. In other word, they are taking more than they are giving at the expense of the tree. These nutrients and energy producing fluids can be better spent stimulating dormant buds for spring and aiding in the development of additional twiggging and the formation of shoots further back on the branches.

Needle thinning is therefore done for three (3) basic reasons: The first has already been described – to remove those needles which no longer serve the tree and therefore prevent other parts of the tree from receiving nutrients necessary to its development as bonsai. The second reason for needle removal is to increase the amount of light and air to the interior of the tree. The increased light further stimulates dormant buds and enables viable needles on the interior of the tree to carry out their function more effectively. The increased air circulation aids in preventing fungal diseases. The third reason is to aid in the effort to balance the trees vigor between the exterior and the interior of the tree and between the upper branches and the lower branches of the tree. This third reason is why we not only remove last years needles but also

remove some of the current years needles as well during this time of year.

Do not forget what the genetic framework of a tree is designed to do – survive. They need to grow as quickly as they can in order to survive. They need to grow as tall as they can in order to rise above other trees to receive the light. When they can grow no taller, they need to spread out as much as they can to gain strength and energy to live as long as possible, to propagate their species. To this end, pines sacrifice branches and shoots low on the trunk in order to send growth skyward. They will sacrifice branches on the interior of the tree in order to grow outward. They will grow needles as long as they can to absorb as much sunlight as possible to produce as much food as possible.

Of course this is not what we want to achieve in bonsai. In truth, we fight against everything that the tree wants to do. We want growth close to the trunk. We want the needles short. We want the branches to be short with a lot of ramification. We want low branches because they are necessary for its development as a bonsai. We don't want it to grow 25 feet tall. But at the same time, we try to feed them as much as they can stand to get as much growth as possible. What a paradox!

Just remember this; needles are factories for growth. The more needles on any given branch or on any portion of the tree, the stronger and more dominant that branch or area will become. By reducing the number of needles in areas of strength, you diminish that portion of the trees ability to produce food and therefore are allowing weaker areas to be able to gain in strength when new growth occurs.

Look at the photographs below.



The photo at left shows the same three shoots, but with last years needles removed. The removal of last years needles occurs on all three shoots. This is necessary to allow light and air into the interior of the tree which aid in the formation of additional buds in the spring.

However, simply removing last years needles is not enough. What is necessary is to help balance the vigor among the shoots. As you can see from the photo, the strong shoot has many more needles (factories) than the other two shoots, and the shoot of medium strength has many more needles than the weak shoot. If left to their own devices, the shoots as they are now would continue to maintain their respective strength when spring growth begins. It is therefore necessary to remove some of the new needles from the current years growth to help balance the strength of candles as they emerge from the tips of the various shoots.

The photo at the right again shows the same three shoots, however this photo shows the extent to which the current years growth is removed. The additional removal of some of this years needles is carried out on the strong shoot to lessen that shoots ability to produce food and gain strength. By creating a situation where the weaker shoot has more “factories”, it is given additional help in catching up to the strength of the other shoot. In this way, we are able to help balance strength and growth to a certain degree.



The strong shoot represents those found in the uppermost portion of the tree and to a lesser degree, the outermost shoots on the middle portion of the tree. The shoot of medium strength would most typically be found in the mid-portion of the tree and to a lesser degree on the tips of lower branches. The weak shoot represents those which would most typically be found on the lower portion of the tree and on the innermost portion of the middle of the tree.



The weak shoot now has more needles than the shoot of medium strength and the medium shoot now has more needles than the strong shoot. Note that the weak shoot at the

base of the strong shoot as well as the weak shoot to the far right in the photo had no new needles removed. Now when the spring buds begin to swell and elongate, their growth will be diminished in the strong areas and enhanced in the weak areas.

The advice or guidance on the number of new needles to be removed from any given shoot is not an easy thing to do. There are many variables to be considered and in some areas and indeed on some trees, there will be no new needles removed. The most important variables to be considered are:

- Is the shoot in the upper, middle, or lower part of the tree? Meaning, is the shoot strong, of medium strength, or weak?
- Is the shoot located at the tip of a branch, on the side, or on the interior part of a branch?
- Is the shoot being used to lengthen or strengthen a weak branch or under-developed area of the tree?
- Is the shoot being used to increase twigginess and provide fullness or depth to a branch?
- Is the tree in its initial, intermediate, or final stages of development?
- Is the tree very strong, or is it in a weakened state with poor color and minimal new growth?

Every one of these questions must be considered in determining how many new needles (if any) are to be removed. That said, a very general rule of thumb for trees in healthy condition, with vigorous growth, for purposes of ramification, and for trees in their intermediate to advanced stages of development, the following is suggested: For weak areas of the tree, such as lower branches and interior shoots, leave 7-9 sets of needles. This may even mean leaving some of last year's needles in place as long as they are in good health, have strong color, and appear to still be viable. In areas of moderate strength, such as the middle portion of the tree, exterior shoots along the sides of branches, and shoots on the tip of lower branches, leave 4-6 sets of needles. And for strong areas, such as the crown of the tree and the tips of branches in the middle of the tree, leave 2-3 sets of needles. As a side note, there may be trees at the advanced level of development, where strength and vigor are equally distributed, which require an equal amount of needles removed throughout the tree.

I hope that this information is helpful in your efforts to grow black pine bonsai, and while this article has specifically dealt with Japanese black pine, the same basic procedures can be carried out on the other tow-needle pines native to Louisiana mentioned at the beginning of this article.

photography by Randy Bennett