

Chapter 14. Pampering Crop-trees:

Most commercial forests are huge and composed of relatively low value trees. In contrast, black walnut plantings are usually small and contain trees of high value (at least in the eyes of us growers). It is reasonable that forest management methods might change from a focus of “acres” to a focus of individual “trees”. With these thoughts in mind, we have been measuring black walnut tree character and growth for several years. We wanted data from a variety of tree ages, sizes, and treatments. One decent relationship shown below is crown size vs. stem diameter. The measurements are from five different black walnut plantings ranging from small to large diameter and from intense to no management.

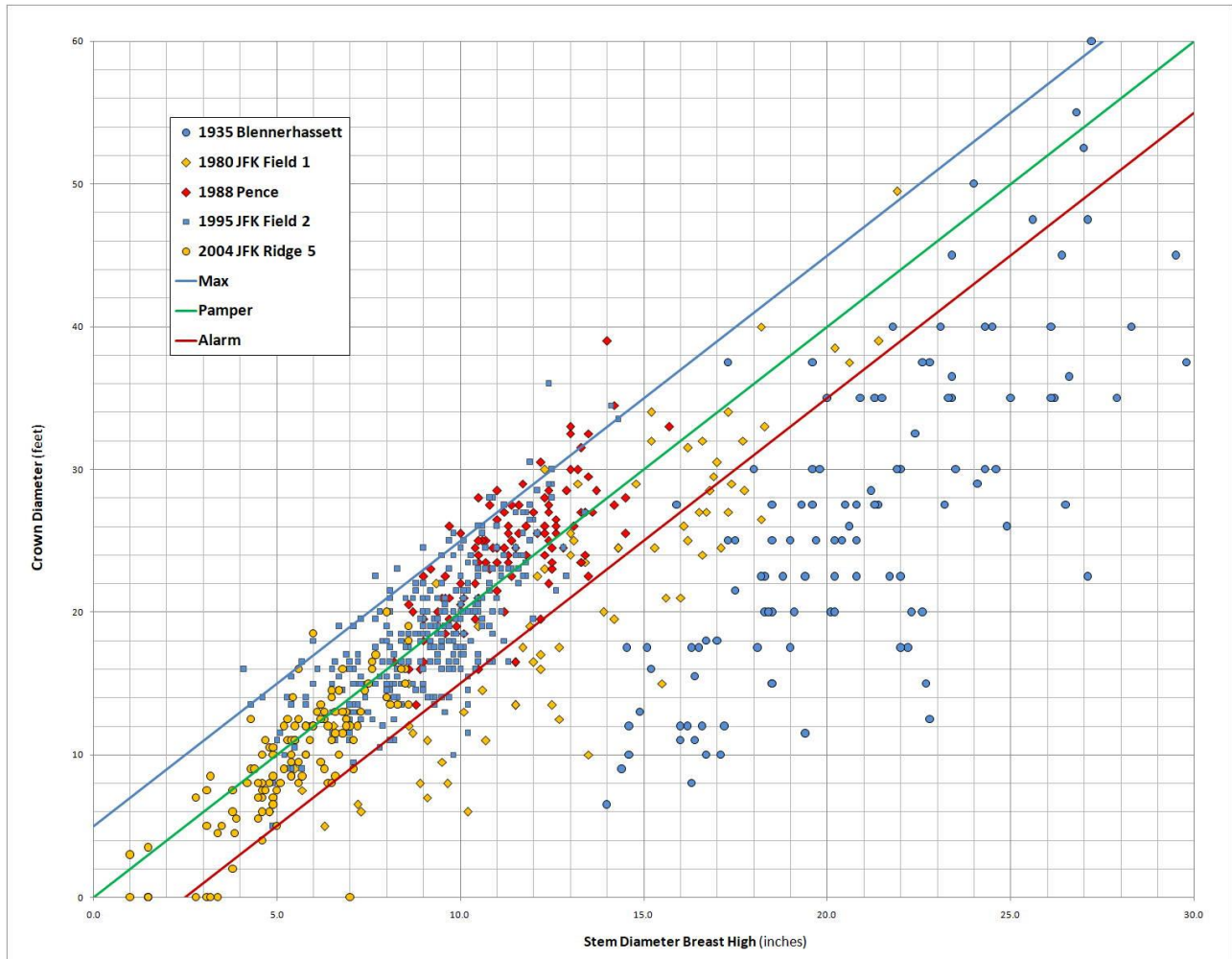


Figure 1. Crown diameter vs. stem diameter for black walnut trees from five plantations.

In addition to the tree data points in Figure 1, a Max Crown Diameter blue-line is shown. The blue line represents maximum crown size that stems and root balls can safely support. If crowns were much bigger than the blue line, trees would break off or uproot. Open grown trees without any crown competition typically grow up with big crowns close to the Max blue line. All the trees shown here are not open grown, but are in plantations. None the less, the few biggest crowned plantation trees have crowns near the blue line, as big as open grown trees.

Another interesting concept is the "Alarm" red line. Plantation trees, with crowns squeezed smaller than the "Alarm" red line, are being crowded toward a very slow death. The Alarm red line is a tipping point to disaster. Trees failing in the canopy fall further behind, lose resources, fall still further behind, and have no means to recover. It may take many years, but they are on a runaway track to humus. We have measured many trees that were clearly losing the canopy battle. Their DBH growth was pitiful and their crowns averaged 13 feet smaller than the Max blue line. I have placed the red alarm line 10 feet below the Max blue line.



So, healthy growing black walnut trees live between the two constraining lines. Their crown cannot get too big (above the blue line they will tip over) or too small (below the red line they will be shaded out). For best growth it would be better to have bigger crowns near the Max blue line. I placed a "Pamper" green line half way between the two constraint lines. The objective is to "manage" crown size bigger than the Pamper green line. Crop trees with crown size bigger than the green Pamper line (2 x DBH) are in good shape and can be left a while to grow. Crop trees with crowns smaller than the green Pamper line could support bigger crowns (hence more growth) and are candidates for a little canopy assistance (pampering).

Figure 2. A "Blueline" black walnut tree with a 12-inch DBH and a 24-foot crown.



As growers, our goal should be to convert sunlight into the most expensive wood possible, and that is black walnut veneer. Tree crowns are our energy collectors. Our method should be to select veneer-potential crop trees at a young stage, then manage their crown size to keep them growing expensive wood volume - - - right up between the blue and green lines like Hugh Pence's crop trees.

Taking a closer look at the Pence crop tree data (red diamonds in Figure 1.) shows about 25 crop trees below the Pamper green line. These 25 crop trees could profit from an increase in crown diameter. Only 25 trees deserve any attention out of 175 crop trees and 400 total trees. Looking up in the field revealed that about half of the 25 "challenged" crop trees already had room for crown expansion. The extra canopy space was due to earlier general thinning conducted at the Pence plantation. So, in fact only 12 trees out of 400 needed any attention. The crowns of these 12 challenged crop trees is examined to determine their most offensive neighbor to be culled.

Applying the tree-by-tree pampering method resulted in culling a total of 12 neighbor trees. By contrast, a general thinning to achieve the usual Crown Competition Factor target of 80% would require culling 94 trees. In the case of the pampering method, the difference, 82 trees, can be left to grow another 5 years utilizing space that the crop trees do not need just yet.

Figure 3. The Crown measurement position.

Selecting and marking crop trees was covered in Chapter 13, now we can't put off doing some actual work much longer. It is time for action, but with caution. Growing top-quality veneer black walnut is an unusual and tricky enterprise. The normal aggressive crop-tree release thinning (especially by felling culls) is not a good idea for us. Our crop-trees are very expensive trees. Among other objectives we want flawless bark left on the crop trees.



Given that we have identified and marked the crop-trees, it is time to start pampering them. We will waste no effort on non-crop-trees. Some crop-trees may not need any pampering, but some could use an occasional gentle assist. We are growing veneer material and need to help our crop-trees with several gentle nudges. In contrast, the customary aggressive release thinning results in a jump in annual ring spacing, which is not a problem in lumber markets, but is a problem for the veneer market.

There are other reasons we need to go slow with thinning. We would like to keep the canopy intact to densely shade the understory. We are creating unnaturally tall trees. We need to keep trainers and cull trees in place to give our slender crop-trees protection and time to fatten up. Slender trees are vulnerable to wind upset, or slowly bowing over if exposed or standing alone. When we come upon a crop-tree very much squeezed in the canopy, we only girdle its most offensive neighbor. It takes a couple of years for the neighbor to defoliate and depart this life. In another three years the crop-trees expand and claim the freed canopy. Then it's time to see if more help is needed. This scenario is what is meant by "pampering". Pampering means a gentle slow release and only if needed.

So, the "tree-by-tree Pampering" method involves going to each crop tree with a hatchet or small chainsaw. Measure the DBH and multiply by 2 to find a crown diameter target. Pace off the crown diameter drip line to drip line (north/south, east/west, and average). If the measured crown is bigger than $2 \times \text{DBH}$, walk on. If smaller, girdle the most threatening non-crop neighbor. After you have measured crowns and compared them to max crowns for a few days, you will be able to just look up and determine what to do by inspection.

Figure 4. A culled black walnut with no herbicide treatment. The sprouts failed to survive under white pine shade. The offended crop tree is shown standing in the background wearing a blue ribbon.



Standing dead trainers are a beautiful sight only to a forester, a veneer-wise landowner, or the local woodpeckers. Besides providing some protection, standing dead trainers are doing another very important job. They are shedding weight. They are drying out and losing limbs without injuring our nearby crop-trees. When they finally fall, it is a minor thump, where thinning sites often look more like the aftermath of an artillery battle.

The tulip poplar ex-trainer, shown at left, made the mistake of dominating a crop black walnut. If felled while alive, it would have crushed its neighbors. Now it is rotten to the core and its final job is to feed soil fungi.

Figure 5. A culled tulip Poplar.

Conclusion:

Only release crop-trees with crowns smaller than 2 x DBH and without canopy space to expand. The process should be slow, gentle, close to doing nothing, and revisited every few years

jfk 2021 Oct