

Title: Restoration of storm damaged trees

When major branches on trees are broken during severe storm events or are topped, they often respond to this damage by sprouting new branches, often from latent buds. Many sprouts originate from ends of damaged branches or heading cuts, while others grow upright from horizontal limbs. Sprouts are necessary for damaged trees to begin restoration, because they replace the branches and foliage lost when the tree was damaged, help provide needed carbohydrates, protect the bark of the parent stem from sun scald damage, and may also assist in reducing the spread of discoloration and decay following injury.

It has long been accepted that sprouts are more weakly attached to their parent branch or stem than normal branches. Unlike normal branches, sprouts either develop from an epicormic bud trace or from callus tissue near an injury. Once initiated, sprouts often grow quickly and can soon become the largest lateral branch on a main scaffold limb or trunk. When sprouts are young, they lack the overlapping layers of branch and stem wood at the branch union, which is typical of normal branches. Although it is generally believed that sprouts have a weak attachment, little empirical evidence exists to support this.

Many shade trees that survive severe storms or the malpractice of tree topping will require restoration pruning that incorporates sprouting branches as part of the new crown. The lack of research, however, leaves arborists with few research-based guidelines on how to craft strong trees from storm-damaged sprouting crowns. Therefore, understanding the attachment strength of these sprouts is essential to elevate our current understanding of restoration pruning.

Because there has been scant research on sprout attachment strength and crown restoration pruning there are many unanswered questions. Are sprouts more weakly attached than "normal" branches? If so, given enough time, will sprout attachment strength become as strong as "normal" branch attachment strength? How does the attachment strength of sprouts originating near the cut end compare to the attachment strength of sprouts originating away from the injury? What pruning treatment methods are most effective in improving crown restoration following severe storm damage or topping? Does the rate or amount of decay impact attachment strength?

This presentation will highlight our current understanding of epicormic sprouts and cover current recommendations for the care of storm damaged trees, with a focus on crown restoration treatments. Recently completed and ongoing research investigating crown restoration treatments will also be presented.