

The ABCs of Large-Tree Pruning – An Introductory Discussion

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We hope most of you are familiar with the *ABCs Field Guide to Young & Small Tree Pruning* (hence referred to as the *ABCs*), which we co-authored. We developed the *ABCs* pruning method to simplify teaching and learning, and to address the most important pruning needs of small and young trees. The method is the *ABC* acronym that guides the pruner through the pruning process and makes it easier to recall. We also suggested these principles could be applied to larger trees. So here we go – a case study for the *ABCs* of large-tree pruning.

For purposes of our discussion, we will walk through the *ABCs*, discuss the differences when applied to large trees and the adjustments to the method for use in large-tree pruning. We are going to limit our definition of a large tree to one that cannot be pruned from the ground and is still growing in height. Mature trees that have stopped growing in height have different pruning needs. Having a copy of the *ABCs* for reference would be useful for this discussion.

The “large” differences

Objectives

The ISA Tree Pruning BMP directs the user to define the objective of the pruning. The overall objectives of the *ABCs*, and as they would apply to pruning for larger trees, are health, structure, clearance and safety. Qualifying structural pruning further, in the *ABCs* we are working to “train” a tree so as not to develop structural problems that we know will fail in the future. On a large tree, our primary objective is pruning for safety and to “treat” structural problems present that may lead to a catastrophic failure, shortening the lifespan of the tree. Overall, though, the objectives are “largely” the same, just on a larger scale, and there are larger implications of your work. We can also add an additional objective: this process can be a



Photo 1. Examples of “poor” pruning can be seen every day in large and small trees. Here, over-raised and codominant stems were ignored. Using the ABCs, these branches would have been addressed several times. Unless otherwise noted, all images courtesy of the authors.

tool for a salesperson to specify a service.

Safety

Another difference is safety – for the pruner, co-workers, bystanders and the property. It requires a trained and qualified arborist and workers furnished with the proper PPE, tools and equipment. We will not delve into safety procedures other than to direct you to review your company standards and our industry standards (ANSI, etc.), and reinforce the need for you to complete pre-work safety assessments and inspections.

Biology

The implications of your pruning a larger tree are, well, “larger.” The removal of energy-producing leaf area has a more significant impact on tree health. Removal of structurally defective branches may not be an option because of the impact on the total amount of leaf area you can prune (the dose), the size of the resulting pruning wound and aesthetics.

Pruning plan

In the *ABCs* for small trees, the method-

ology is the plan. On a large tree, however, you will need to develop a pruning plan before you begin pruning to assess safety conditions and the logistics of your working in the tree to ensure efficiency.

Bring your tools

In the *ABCs*, our “tools” include pruning tools, terminology, pruning cut types and objectives. The most obvious difference in large-tree pruning is the tools – adding safety equipment, rigging and power saws. You should add a probe and sounding mallet to inspect for decay and other defects.

The other differences are emphasizing appropriate pruning cuts. The use of heading cuts will be limited to twig-sized branches. In addition, you should limit the size of the pruning wounds. Pruning wounds that expose heartwood are more likely to become infected by decay fungi. If possible, remove larger branches over a period of pruning cycles. **(Photo 1)**

The ABCs method for large-tree pruning

Applying the *ABCs* to large-tree pruning begins with developing a pruning plan. For purposes of our discussion, we will use the plan to discuss the differences for each of the *ABCs* steps.

A – Assess the tree

There is clearly more work here. As you develop your plan and complete the pruning, we suggest using the central stem (A-Form) and each scaffold branch as an organizational module.

- Scan the central stem (A-Form), visually completing the *ABCs*
- Scan each scaffold, visually completing the *ABCs*

A – Assess the tree for safety

The *ABCs* does not have a step that includes assessing safety, but with a large tree this is a requirement. Paraphrasing the ANSI Z133.1 standard, a visual hazard assessment shall be performed prior to performing any work in a tree. You are responsible for your safety and the safety of others in and around the work zone. Your safety assessment should include a visual inspection and sounding/probing for decay, including assessing:

- the roots and root crown

- the trunk
- scaffold attachments
- the work zone

A – Assess the tree – determine the pruning dose

Assess the health of the tree. Use visual indicators such as twig elongation, leaf color and size, crown density and dieback. Based on your assessment, you will set a pruning dose of low, normal or high, as in the *ABCs*. The ISA Tree Pruning BMP states that “there should be a good reason to remove more than 25 percent of the live crown in a single year.” So the high dose should be 25 percent, versus the 33 percent stated in the *ABCs*. You will still need to measure the dose as pruning proceeds and *stop* when the dose is reached. As in the small tree *ABCs*, only use the dose you need to accomplish the pruning objectives.

A – Assess the tree – tree structure & ABCs pruning forms

As in the *ABCs*, you will need to select the *ABCs* pruning form: A-Form or B-Form. At this stage, the tree is an A-Form or a B-Form and we will not try to change that. If it is an A-Form, select a



Photo 3. A heritage red oak with an over-extended branch and codominant stems. Courtesy Chris Hanstein, Aspen Tree Service.



Photo 2. Reduction cuts of branches competing with the central stem were made on this A-Form oak.

central stem, as in the *ABCs*.

A – Apical dominance pruning

In the *ABCs*, we quickly head any branches competing with the central stem. In a large tree, we will work to promote the central stem’s dominance by suppressing codominant stems with reduction cuts. **(Photo 2)** We may also consider other treatments such as cabling and bracing.

B – Bad branches

- Broken, dead, diseased, rubbing
- Bad branch attachments – be sure to address attachments with included bark.
- Over-extended branches – This is an addition. Over-extended branches are more prone to failure and apply torsional stresses on the trunk. Suppressing with a reduction cut will be your most likely treatment. **(Photo 3)**

C – Competing branches

Each of these steps will apply as in the *ABCs*, however, you will need to be more conservative. Focus on more severely defective branches.

- Clearance
- Codominant stems
 - suppression with reduction cuts will be your most likely treatment.
- Cabling & bracing is another option
- Competing laterals



Photo 4. Apply the ABCs to each scaffold in your plan development and when implementing pruning, as though it was an individual tree.



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- diameter of lateral relative to the scaffold
- competing with adjacent scaffolds
- Multiple attachments – In the *ABCs*, this step is focusing on the central stem. Here, most of your work will be on the scaffolds and branches. Focus on severely defective attachments.
- Vertical spacing – In the *ABCs*, this step is focusing on vertical spacing on the central stem. Here, most of your “spacing” work will be on the scaffolds and branches.
- Crossing branches

Your end product is your pruning plan and should include the following:

- Safety considerations
- Pruning dose
- A-Form or B-Form pruning
- Review your plan with the crew

Pruning

We all know that the best-laid plans require adjustment in implementation. Two predictable challenges are monitoring your dose and coming upon a “problem” you could not see from the ground. With your plan as your guide, perform the *ABCs* on each scaffold branch, as if it was an individual tree, using the following guidelines/alterations to the *ABCs*. (Photo 4)

A – Ascend the tree

- As you climb or ascend in an aerial lift, inspect the scaffold-branch attachments for bad branch attachments that may require reduction of the scaffold branch or other significant defects and adjust your pruning plan accordingly.
- Identify the scaffolds that will require more pruning than others. Select the order you will complete pruning on each scaffold.

B – Begin pruning

- Perform the *ABCs* on each scaffold and then on each lateral branch, if the pruning specifies and your dose permits.

C – Complete your pruning

Before you leave the tree, confirm the tree is free of hangers and pruning stubs.

Monitoring the dose

Unlike small trees, piling the branches

to monitor your dose may not be practical. Cleanup of pruned branches will proceed with the pruning. Here are suggestions for monitoring your dose:

- Apply your dose to each scaffold as you prune.
- Trees in poor health – If the health of the tree is poor, then you may have to sacrifice efficiency and pile prunings to monitor the dose throughout the pruning process.
- A-Form trees – If you are using an aerial lift, it may be practical to complete your suppression pruning on each defective scaffold or scaffold competing with the central stem (A-Form), and assess your dose before working the interior of the tree.

Conclusion

Large-tree pruning is the most frequently applied plant health care treatment. It is also a treatment that has a high variability in practice. Like young-tree pruning, focusing on mitigating structural defects will prolong the longevity of a large tree. Applying the *ABCs* method to pruning large trees may provide a practical methodology for reducing the variability between pruners and help to ensure that the most critical pruning needs of a tree are addressed.

Our hope is to take this introduction to applying the *ABCs* to large-tree pruning and hone it into a well-defined pruning methodology. We welcome your comments and suggestions.

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