



## Hardwood Tree Pruning Guide

### Pruning Fundamentals in Growing Veneer Quality Logs Key Topics & Helpful References

#### Pruning Basics -

1. Pruning – Why do we need to prune?
  - A. Pruning is all about “**managing the competition**” within the tree.
  - B. Or, removing limbs that may be interfering with routine ground maintenance and travel
  - C. Pruning needs vary between plantation grown trees versus natural regeneration trees
  - D. Improves quality and value of butt logs to at least “A” grade or higher veneer; may also improve value of second log within your target pruning height to be prime sawlogs.
    - \* **Know your veneer market specifications!**
    - \* Target log lengths: 8’6”; 12’6”, 14’6”, 21’ 6”; (these lengths may include two logs).
    - \* **Be sure to allow for stump height & trim allowance in determining log lengths.**
    - \* Limbs & knots are main reasons most trees do not yield at least “A” grade veneer.
    - \* Secondary defects include: small diameter trees, wire, lightning, bird peck, crooks, sweep, pin knots, mineral streaks and windthrow.
  - E. Types: Pruning for form = **Corrective Pruning**; Pruning for Function = **Lateral Pruning**.
2. Hardwood Species to Prune
  - A. Black Walnut
  - B. White Oak species
  - C. Hardwoods with a veneer or stave market potential
  - D. Other hardwood trees when pruning may improve sawlog values.
3. Timing – When and When Not to Prune
  - A. Black Walnut – prefer **dormant season** (winter months: November to mid-February)
    - \* Avoid pruning from budburst until the first leaves mature.
    - \* Sap bleeding does not lead to reduced tree growth.
    - \* Fungal infections from airborne spores are a concern if pruning outside the dormant season.
    - \* Individual trees you may not revisit soon should be pruned when you are there! i.e. pruning is more critical than timing.
  - B. White Oak – dormant season
  - C. Red Oak – dormant season
    - \* Avoid pruning from mid-March until June when sap-feeding insects that carry oak wilt spores are attracted to open wounds.
  - D. Avoid pruning while leaves are forming.
    - \* The worst time to prune hardwoods is from budbreak to when the first leaves reach Mature size. Mid-March to mid-April is a guideline depending on location and weather.
  - E. Avoid pruning end of August to early September to allow the tree time to compartmentalize pruning wounds before dormancy.
  - F. Limit summer pruning (if necessary) from July to mid-August.
  - G. Dead limbs can be removed anytime.

- H. Early winter to mid-February is the ideal time to prune hardwoods
  - \* Sap flow is minimal
  - \* Lower fungal activity
- I. Potential diseases from pruning during sap flow:
  - \* *Ambrosia* beetles are attracted to sap flow. They can kill the tree stem or a vertical strip of cambium above their point of attack, plus they may carry *fusarium wilt spores* that can also create seams (frost cracks) and kill black walnut trees.
  - \* **Oak Wilt** - sap feeding beetles pick up the fungus and carry the spores to fresh wounds on red oak trees. Avoid pruning red oaks from mid-March until June.
  - \* **Nectri canker disease** is more common when trees are injured such as pruning operations.
- J. Isopropyl alcohol (rubbing alcohol) with a concentration of at least 70% alcohol can be used to disinfect pruning tools between trees, and between branch cuts **IF diseases ARE PRESENT.**

#### 4. Tools & Supplies Needed

- A. By-pass hand pruners, shears or snips (avoid anvil pruners)
- B. Folding or fixed handle, 13" hand-held pruning saw
- C. By-pass tree loppers or lopping shears
- D. Pole pruning saw (manual and/or power); pole saw pruning shears needed
- E. Small chain saw (only for coppicing many trees)
- F. Duct tape (small roll) or bright color electrical tape; splits if needed
- G. Knife to cut electrical tape - if used

#### 5. Utilize “tree-to-tree competition”

- A. Initially, retain ash, boxelder, and some faster growing species like maples and sycamores as trainer trees for black walnut, but top all species growing faster than black walnut; you can utilize brush and briars (if present) to “train” walnut trees to grow straight and tall reducing your pruning workload somewhat.
- B. Remove or top very fast growing cottonwoods, sycamore, soft maples, basswood, and black locust trees which are too competitive and can outgrow and overtop walnuts.
- C. Cut back leaders of **canopy competing trees** and brush at **75% of the crop tree height** once those trees begin to interfere with the growth of the crop trees. In situations where the “trainer brush” is very dense, you may need to cut off the most aggressive stems and apply approved herbicides to the stumps. Basal spraying is preferred by many for thinning thick competition. **Note:** Never use **Pathway** for cut stump or girdling treatments to “thin” crop trees. This herbicide can translocate through root grafts of common species.

## Target Pruning –

#### I. Techniques of “Target Pruning”

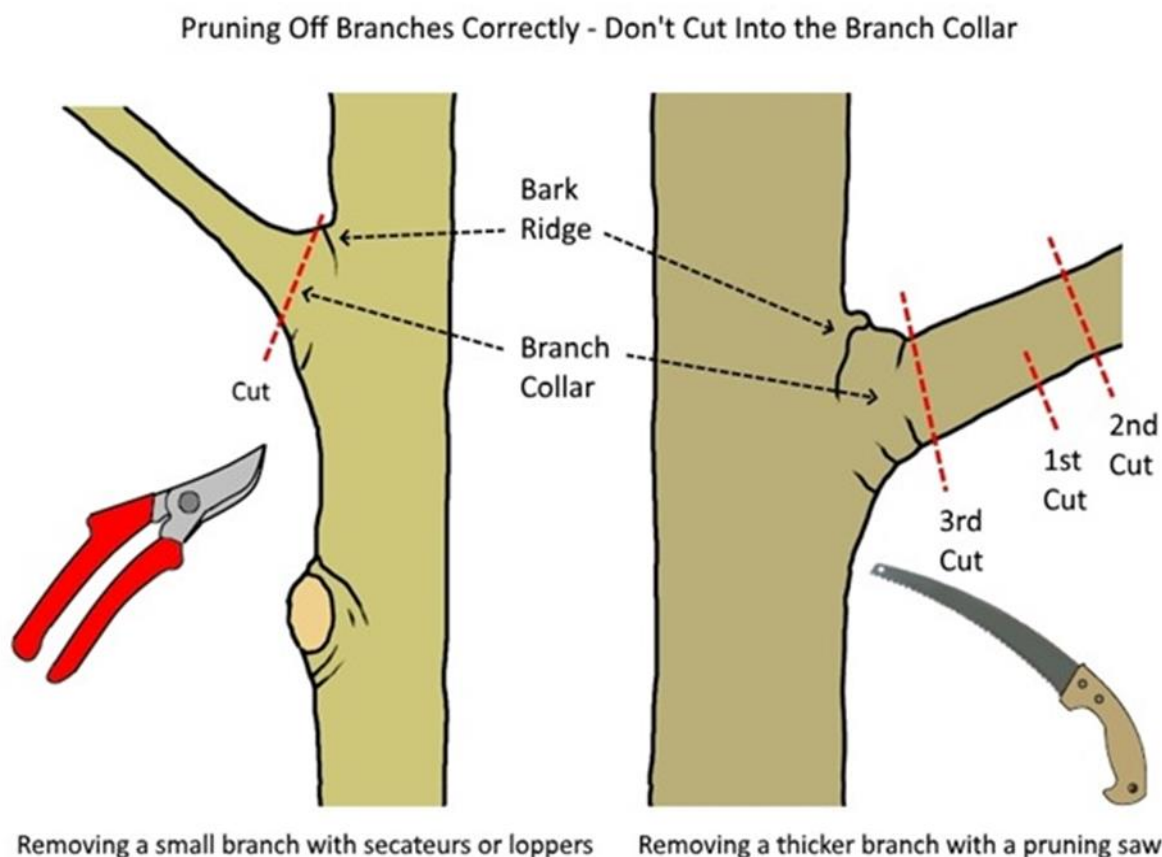
- A. Locate central leader and prune top down (**Corrective Pruning** - focus on tree form).
- B. **Lateral Prune** branches just outside their branch collars to minimize size of the pruning wound.
  - \* **See pruning diagram on page 4**; this is pruning for function.
  - \* Branch collars compartmentalize off the branch wood from existing specialized tissues in the branch collar from the stem wood shielding the stem wood from fungal spores. Cutting into a branch collar prevents protective **callus tissue** forming around wound.
- C. Ideally, remove no more that 25% of the tree canopy in one growing season (may be only one limb in smaller trees).
- D. Shaping the central leader to assist “**within tree competition**”
  - \* Use tape and/or splints forcing the selected leader into a straight, vertical position.
  - \* Select the leader with a lateral branch underneath that will apply upward competitive pressure to keep the selected leader straight.
  - \* Prune off competing leaders retaining one or possibly two central leaders.

- \* Consider making one cut just above a bud scar in the region of widely spaced bud scars. The top bud is likely to produce a new shoot almost in line with the central stem and some of the lower buds will produce horizontal lateral branches.
2. Managing multiple leaders (pruning options):
    - A. If the leaders are in first year wood only (crows nest), consider doing nothing until next pruning season and see if the tree will correct itself.
    - B. Select the best leader and remove the others.
    - C. Select two leaders and remove the others, but tip prune the poorest of those two leaders. Revisit the tree next pruning season and manage for the best leader removing all others.
  3. Pruned limbs and cut trees – what to do with them? (options)
    - \* Remove debris entirely from the plantation keeping equipment away from your trees.
    - \* Pile branches *within* rows if you mow *between* rows.
    - \* Allow branches to stay where they fall and degrade over time. This option dictates you likely will not be using farm equipment between rows during the pruning years.
  4. Coppicing (cutting of misshapen, damaged stems or diseased trees beyond corrective pruning)
    - A. Why Coppice?
      - \* To remove an unsightly, misshapen stem or bark removed from 50% of circumference.
      - \* To replace a diseased or damaged tree with new sprouts from the root collar.
      - \* New, managed sprout will reach the height of original tree in 2-3 seasons **AND** will likely have better shape.
    - B. Diseased trees should be killed and removed from the plantation. Coppicing diseased trees should only be carried out with guidance from a specialist in hardwood tree diseases.
    - C. How to Coppice:
      - \* Look around the base of the tree looking for defects.
      - \* Avoid coppicing trees with damage at trunk collar.
      - \* Cut tree stem at a slight angle 1” above ground surface.
      - \* Once sprouts emerge, remove all but one or two sprouts, so eventually only the best sprout remains.
      - \* Stems damaged several feet above ground can be **“high coppiced”**; this technique has limited success and it relies on managing the multiple leaders that will emerge.

## Safety Procedures –

1. Inform others where you will be working and when you will return.
2. If possible do not work alone.
3. Follow accepted safety procedures when using sharp pruning tools.
4. Wear an approved hardhat, long-sleeved shirt or jacket, eye coverings and leather gloves.
5. Have a fresh, fully stocked First Aid kit nearby.
6. Have a cell phone with a good service connection on your person with pre-set emergency numbers.
7. Have water available to hydrate yourself in case of a severe wound.
8. Quit pruning when you are tired. Return another day.
9. Rotate high pruning and low pruning days to give yourself time to recover from using pole saw.
10. If you leave pruned limbs where they drop, pay attention to where you are walking to avoid tripping.

## Pruning Illustration -



**Note:** This illustration does not correctly represent a black walnut tree branch growth. The **branch bark ridge** starts at the branch crotch the first year and gradually gets more noticeable as the tree ages. None of the above illustrated branch bark ridges intersect where the pith of the branch and stem actually occur. There should be a noticeable raised bark zone (on walnut especially) where the branch and tree stem join.

Learning where to make the final cut just outside the **branch collar** is critical to successful pruning. Attempting to remove heavy branches with a single cut can result in bark peeling below the branch collar leaving an open wound (**callus tissue**) in the stem wood below the zone of compartmentalization. The two-cut method is commonly used making the first cut at least 18" or more out from the branch collar, but the three-cut method (shown above) is the most professional method of removing limbs.

### Key Points -

- ⇒ Pruning can somewhat slow the growth rate of trees. We are looking at a compromise between improved stem quality and growth when pruning. Prune only branches that need to be pruned!
- ⇒ Revisit your non-crop trees over time because, surprisingly, they may begin to look better!
- ⇒ Identify "**crop trees**" early in the life of the plantation; focus on pruning **ONLY crop trees**.
- ⇒ Begin thinning "**crop trees**" once **canopy closure competition** begins.

## Pruning References -

Many of the following articles are posted at the Missouri Chapter, Walnut Council website:

<http://walnutcouncil.org/state-chapters/missouri/> under **“Pruning Articles”**:

- ◆ **“Pruning Guide for Walnut and Other Valuable Hardwoods”**, <http://walnutcouncil.org/wp-content/uploads/2019/01/PruningguideMODec2015special-1.pdf>, Harlan Palm, Jerry Van Sambeek, and Bob Ball, Members, Missouri Chapter Walnut Council.
- ◆ **“To Prune or Not to Prune”**, <http://walnutcouncil.org/wp-content/uploads/2019/01/TopruneornotMOApr15special-1.pdf>, Harlan Palm, Member, Missouri Chapter Walnut Council.
- ◆ **“Pruning Central Hardwoods”**, <https://www.fs.usda.gov/research/treesearch/18605>, Central Hardwood Notes, Schlesinger and Shigo, Northeast Forest Experiment Station, USDA Forest Service, Carbondale, Illinois, 1989.
- ◆ **“Corrective Pruning of Black Walnut for Timber Form”**, <https://www.extension.purdue.edu/extmedia/FNR/FNR-76.html>, Walter F. Beineke, FNR-76, Woodland Management, Cooperative Extension Service, Purdue University, West Lafayette, Indiana, 47907, 1994.
- ◆ **“Pruning Timber Trees for Form and Function”**, [Pruning Timber Trees for Form & Function - YouTube](#), Jay C. Hayek, Extension Forestry Specialist, Department of Natural Resources and Environmental Sciences, University of Illinois, Urbana- Champaign, 2014.
- ◆ **“Corrective Pruning of Black Walnut Seedlings Injured by a Late Spring Frost”**, <https://cfs.nrcan.gc.ca/publications/download-pdf/8941>, F.W. Von Althen, Great Lakes Forest Research Centre, Sault Ste. Marie, Ontario, Report O-X-265, Canadian Forest Service, Department of Fisheries and the Environment, June 1977.
- ◆ **”Disinfecting Pruning Tools”**, [Disinfecting-Pruning-Tools\\_MO\\_Nov2021.pdf \(walnutcouncil.org\)](#), Dusty Walter, Past President, Missouri Chapter Walnut Council, November 2021.
- ◆ **“Cleaning Pruning Tools”**, [https://ipm.missouri.edu/MEG/2018/1/cleaning\\_pruning\\_tools/](https://ipm.missouri.edu/MEG/2018/1/cleaning_pruning_tools/), Integrated Pest Management, University of Missouri, January 2018.
- ◆ **“How To Sterilize and Disinfect Pruning Tools”**, <https://deepgreenpermaculture.com/2021/03/14/how-to-sterilize-and-disinfect-pruning-tools/>, Deep Green Permaculture, March 2021.
- ◆ **“Time Pruning to Avoid Disease”**, <https://www.fs.usda.gov/research/treesearch/54001>, Jerry Van Sambeek, Member, Missouri Chapter Walnut Council, and Simeon Wright, Missouri Department of Conservation.
- ◆ **“Preparing to Prune”**, [Preparing-to-Prune.pdf \(walnutcouncil.org\)](#), Bob Ball, Past President, Missouri Chapter Walnut Council, November 2019.
- ◆ **“Target Pruning and Compartmentalization”**, [https://walnutcouncil.org/wp-content/uploads/2021/12/Target-Pruning-and-Compartmentalization\\_MO\\_Dec2021.pdf](https://walnutcouncil.org/wp-content/uploads/2021/12/Target-Pruning-and-Compartmentalization_MO_Dec2021.pdf), Dusty Walter, Past President, Missouri Chapter Walnut Council, Jerry Van Sambeek, and Mark Coggeshall, Members, Missouri Chapter Walnut Council.