

## **Tools for Sustainably Managing your Hardwoods *Wrapping up the Year of the Hardwood* By: Jennifer Gagnon, Virginia Tech**

Over the past year, the Virginia Forest Landowner Update (<https://forestupdate.frec.vt.edu/newsletter/archives.html>) has featured articles outlining the history of exploitation and recovery of Virginia's hardwood forests, the current state of the resource, and the many challenges it faces. This article will wrap up the series with a review and a discussion of the tools and resources available to help private woodland

owners improve the health and productivity of their hardwood forests.

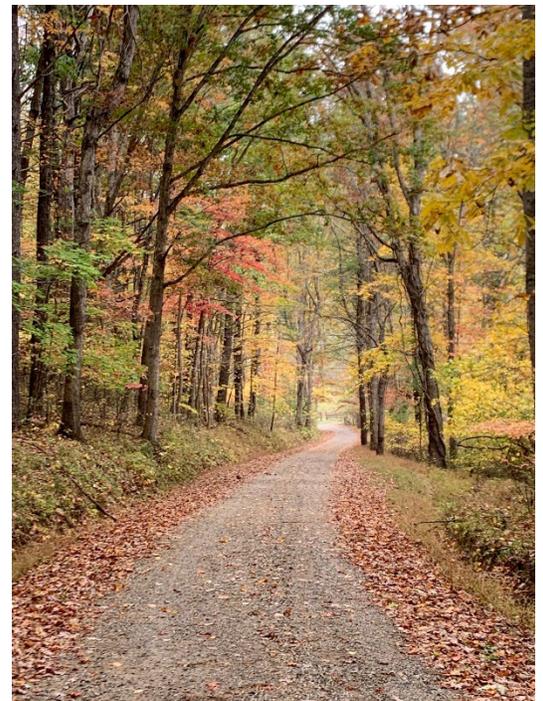
Recall that hardwood forests (made up of deciduous tree species such as oaks, hickories, and maples) are the most prevalent forest type in Virginia. Over 79% of the forests in the commonwealth (12.6 million acres) are hardwood forests. And these diverse forests provide important ecological and economic benefits (Figure 1).

Virginia's hardwood forests have a long history of exploitation, mismanagement, and health issues. Excessive harvesting, high grading, an influx of diseases and insects, a changing climate, and a dearth of robust regeneration due to poor harvesting practices and deer, have left many of the hardwood forests of the commonwealth in a less than ideal state. Add to this a lack of research into effective and affordable management options, and the future of these forests seems grim.

Yet Virginia's hardwood forests have persisted and shown resiliency despite these issues. This provides hope for the future - hope that with proper management, the health and productivity of these forests can be improved over time to ensure a sustainable resource into the future.

### ***What can Virginia's landowners do?***

There is a variety of things woodland owners can do *now* to improve the health and productivity of their hardwood forests (Figure 2). Implementing even one of these practices can be beneficial.



***Figure 1. Healthy and productive hardwood forests provide ecological and economic benefits to all Virginians. Photo by: Jennifer Gagnon, Virginia Tech.***



***Figure 2. Virginia's private forest landowners can implement management practices today to help improve the hardwood forests of the future.***

***Photo by: David Richert, Mason, Bruce & Girard Inc.***

**1. Start Early.** Improvement of hardwood stands takes time. It's best to plan and prepare for future hardwoods years before you cut timber. Contact your forester early, before you cut timber, to maximize your options and make full use of the resources listed below.

**2. Walk the property frequently and look for health problems.** Walking a property regularly will not only increase familiarity with it but will also allow early identification of infestations of nonnative invasive species, insect outbreaks, and pathogens.

The sooner these problems are identified, the easier and more affordable they may be to control. If a forest health problem is suspected, landowners should reach out to their local Virginia Department of Forestry forester or local Virginia Cooperative Extension office for help.

**3. Improve the growth of desirable trees in young stands.** In Virginia, the most limiting resource for tree growth is light. Increasing the amount of light a tree receives can improve its growth and vigor. In young hardwood forests, there is a simple and effective

management practice that accomplishes this called crop tree release (CTR, Figure 3). CTR accelerates the growth of desirable trees and improves the quality of the timber produced by mimicking the natural competition that occurs in forests, with the added benefit of allowing landowners to select which trees are favored (the crop trees).

CTR removes unwanted vegetation around selected crop trees. A crop tree is any tree that will remain in the forest for the long term. Crop trees can be selected based on aesthetics (black gum is beautiful in the fall), wildlife (white oak is a great producer of acorns), timber production (northern red oak is a desirable timber tree), or any other factors a landowner wants to manage for.



***Figure 3. Crop tree release is a management practice that is most effective when applied in young, crowded hardwood stands, such as the one shown in this photo.***

***Photo by: Jennifer Gagnon. Virginia Tech.***

**4. Improve the overall health of the forest.** Timber stand improvement (TSI) is a management practice that can be used in hardwood forests of any age. TSI focuses on removing undesirable vegetation throughout the forest. Undesirable vegetation includes nonnative invasives, unwanted species such as beech and red maple, and diseased and poorly formed trees. Through this process, TSI reduces competing vegetation and focuses growth on desired vegetation, as the additional light entering the forest improves the growth and health of the remaining trees.

In both CTR and TSI, removal of unwanted vegetation can be accomplished in several different ways. The first three methods result in dead, standing trees which make good wildlife habitat. In order of ease of application:

**1. Basal bark herbicide application** is a quick way to apply herbicide to unwanted vegetation using a low-pressure backpack sprayer to thoroughly wet the lower 12-15 inches of the stem. Herbicides for basal bark applications use an oil carrier to penetrate the bark. Trees with thick or rough bark may require increased coverage to be effective. Basal bark applications can be done year-round.

**2. Hack and squirt herbicide application** is an efficient method of injecting herbicide into unwanted stems. A hatchet is used to make downward angled cuts around the trunks. Herbicide is then sprayed into the cuts using a spray bottle. Hack and squirt is most effective when trees are not experiencing heavy sap flow (in spring when the tree is leafing out) and not frozen.

**3. Girdling** kills trees by interrupting the flow of sap between the roots and crown. A hatchet, ax, or chainsaw is used to cut two bands all the way around the stem of the tree. The distance between the two bands should be roughly 2–4 inches. The height of the bands is flexible and can be made at a comfortable level. Girdling can be done anytime of the year. It may take time for girdled stems to die.

**4. Felling using a chain saw or handsaw** is a more labor-intensive option but is useful if you do not want dead standing trees or want material to create brush piles for wildlife. Felling can be done any time of the year, but cooler weather is recommended to make cruising around the woods with a chain saw easier. The lack of leaves and understory plants in the winter months improves visibility and, thus, safety too.

For more details on how to implement these management methods, including herbicide recommendations, visit these resources:

### **Crop Tree Release**

- [Crop Tree Management: A Tool to Help You Achieve Your Woodland Goals](https://ohioline.osu.edu/factsheet/f-50)

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- [Technical Guide to Crop Tree Release in Hardwood Forests](https://www.uky.edu/~jmlhot2/Resources/Technical%20Guide%20to%20Crop%20Tree%20Release%20in%20Hardwood%20Forests_Miller%20et%20al%202007.pdf)

([https://www.uky.edu/~jmlhot2/Resources/Technical Guide to Crop Tree Release in Hardwood Forests\\_Miller et al 2007.pdf](https://www.uky.edu/~jmlhot2/Resources/Technical%20Guide%20to%20Crop%20Tree%20Release%20in%20Hardwood%20Forests_Miller%20et%20al%202007.pdf))

## **Timber Stand Improvement**

- [Timber Stand Improvement for Wildlife | Virginia DWR](https://dwr.virginia.gov/blog/timber-stand-improvement-for-wildlife/)

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### **Control methods**

- [Non-Removal Forest Stand Improvement Techniques](https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs144p2_010620.pdf)

([https://www.nrcs.usda.gov/Internet/FSE\\_DOCUMENTS/nrcs144p2\\_010620.pdf](https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs144p2_010620.pdf))

- [Using Basal Bark Herbicide Applications to Control Understory Tree Species](https://extension.psu.edu/using-basal-bark-herbicide-applications-to-control-understory-tree-species)

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### ***What resources are available to help Virginia's landowners?***

There are tools and programs available to help landowners with both financial and technical aspects of hardwood management. These include:

**1. The Hardwood Habitat Incentive Program (HHIP)** provides cost share for qualified landowners to implement one or more of six approved hardwood management practices (including CTR and TSI). VDOF foresters across Virginia are trained to specifically help landowners participate in the HHIP. [Contact your local VDOF office](#) to reach the forester for your area

([https://forestupdate.frec.vt.edu/content/dam/forestupdate\\_frec\\_vt\\_edu/resources/contact-professional/HHI-Trained-Foresters-Map.gif](https://forestupdate.frec.vt.edu/content/dam/forestupdate_frec_vt_edu/resources/contact-professional/HHI-Trained-Foresters-Map.gif)).

### **2. [The Beneficial Hardwood Management Practices HB1319 Tax Credit](#)**

([https://vaforestry.us4.list-](https://vaforestry.us4.list-manage.com/track/click?u=eb649a059245dbacc8ab50381&id=40f4aba5df&e=1ca1be7366)

[manage.com/track/click?u=eb649a059245dbacc8ab50381&id=40f4aba5df&e=1ca1be7366](https://vaforestry.us4.list-manage.com/track/click?u=eb649a059245dbacc8ab50381&id=40f4aba5df&e=1ca1be7366)) will provide landowners with a nonrefundable individual income tax credit for expenses incurred for the implementation of beneficial hardwood management practices. The credit is equal to eligible expenditures up to \$1,000. This new tax credit went into effect on January 1, 2022. Details for applying will be available by the end of November 2022.

**3. [The White Oak Initiative](https://www.whiteoakinitiative.org/)** (<https://www.whiteoakinitiative.org/>), a partnership among state, federal, and private groups (including the spirits industry) is working to help woodland owners ensure the long-term sustainability of white oak (an important component of hardwood forests). The Initiative supports research and policies that support white oak.

**4. The Oak Crop Tree Release Tool** is an online interactive tool being developed at Virginia Tech that will provide landowners with a consolidated location for information on how to implement CTR in their hardwood forests. This tool will be tested with landowners and natural resource professionals in the fall of 2023.

**5. [Educational programs](https://forestupdate.frec.vt.edu/index.html)** that include examples of different sustainable hardwood management practices are offered through the Virginia Forest Landowner Education Program (VFLEP, <https://forestupdate.frec.vt.edu/index.html>). Most programs are a partnership between the VDOF, Virginia Cooperative Extension, and the VFLEP. Check the Events Calendar (<https://forestupdate.frec.vt.edu/eventscalendar.html>) for programs near you.

As Joe Rossetti, coordinator of Virginia's Hardwood Forest Habitat Initiative, said in the [Summer 2022 issue of the VFLU](https://forestupdate.frec.vt.edu/index.html), (<https://forestupdate.frec.vt.edu/index.html>) *"together, with intentional management, we can ensure a productive hardwood resource for future generations. Forestry professionals are stepping into this future. Won't you walk along with us?"*

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