

# CU IN THE WOODS

## Clemson Extension Forestry and Wildlife Newsletter



### What's Wrong With My Dogwood Tree?

By Dave Coyle

Dogwood trees (*Cornus* species) are one of South Carolina's beautiful flowering tree species, blooming in early spring. Their white flowers can often be seen in the forest understory before most other trees have leafed out, and many people have them as a part of their landscape. But, sometimes, that dogwood in your yard might not bloom like you expected, or it might not leaf out as normal. So why is this happening? There are several reasons, so let's take a look at them.

Typically, when any tree doesn't leaf out or flower normally, it's a sign of stress. With few exceptions (which we'll discuss later) most of the time, dogwoods that don't leaf out or flower are simply stressed. Proper tree maintenance can often alleviate stress.

It is important to remember dogwoods naturally grow on forest edges or in areas where they get some shade and some sun. A dogwood tree planted in the middle of a yard or in full shade is not getting the environmental conditions that this species is used to getting. This in and of itself can stress the tree. And on that note, dogwood trees planted in the middle of a yard receive whatever inputs are applied to the yard. This typically means fertilizers that are high in nitrogen. Nitrogen helps plants make green tissue (i.e., leaves – this is why some lawns are so green, because they receive a lot of fertilizer that's high in nitrogen content). Now while this fertilizer is great for lawns – and will promote tree growth – it will promote leaf growth, not flower development. In some cases, flowering trees don't flower simply because they're getting too much nitrogen.

Another reason a dogwood tree might not leaf out or flower normally is because it's getting too much or too little water. Dogwoods grow on well drained sites in nature, so if your tree is in a low area of your yard, for example, it might be getting a lot more moisture than the tree is used to. Some trees don't like "wet feet" (post oak is a great example of this) and almost all trees are negatively impacted by drought, so anytime water conditions aren't right you're likely to see impacts. Likewise, temperature matters – dogwoods surrounded by structures, concrete, or a paved driveway will experience warmer temperatures than those surrounded by other plants simply because the heat will be reflected off these impervious surfaces. This too can impact leaf out and flowering.

Sometimes, none of those things appear to be "off", and it can



The dogwood tree on the right has fully leafed out while the dogwood on the left is showing signs of distress. Photo credit: Jaime Pohlman, Clemson Extension.

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### Events and More

#### Upcoming Events

Find out about all of our upcoming events by visiting our events page:

<https://www.eventbrite.com/o/clemson-extension-forestry-amp-wildlife-75733679603>

#### Looking for more forestry and wildlife information?

Check out our blog page for past articles and other great forestry and wildlife information-

[blogs.clemson.edu/fnr](https://blogs.clemson.edu/fnr)

## what's wrong with my dogwood tree cont.

be difficult to determine what exactly is stressing the tree. In these cases, it's worth thinking about how the tree was planted. Was it planted too deep (i.e., can you see the root flare)? Are there girdling roots wrapped around the trunk, cutting off the tree's ability to obtain water and nutrients? Many times impacts from improper planting aren't seen until years later, and can be difficult to identify.

Also, it's important to remember that for trees that flower early in the spring (like dogwoods), flower buds are formed during the previous summer and fall. So, if you prune in late fall or winter, you are removing next spring's flower buds.

And let's not forget about pests. The main pest of dogwoods is a disease called dogwood anthracnose. This fungus (*Discula destructiva*) starts out as leaf spots, but soon spreads down the branches into the main stem, causing dark lesions (cankers) where the branch meets the trunk. These cankers can kill the branches and girdle the tree, resulting in a tree with many epicormic branches. Eventually, infection from dogwood anthracnose can kill the tree. Fungicides can be used to manage the disease, as well as certain cultural

treatments. Planting resistant dogwood varieties (like Kousa dogwood, *Cornus kousa*) is also an option.

So, the answer to the question "why isn't my dogwood tree blooming or leafing out?" isn't so simple. Many different factors can impact tree health, which in turn impacts leaf out and blooms. If you have a dogwood tree that is late to leaf out or bloom, be sure to give it a thorough check for these things or call your local Clemson Extension professional.

For even more information, check out our HGIC factsheets relating to dogwoods and tree care:

Dogwood- <https://hgic.clemson.edu/factsheet/dogwood/>  
Dogwood diseases, insects and pests- <https://hgic.clemson.edu/factsheet/dogwood-diseases-insect-pests/>  
Tree Maintenance- <https://hgic.clemson.edu/factsheet/tree-maintenance/>  
Planting trees correctly- <https://hgic.clemson.edu/factsheet/planting-trees-correctly/>

## What are Prescribed Fire Associations, and Why Should You Join One?

By Derrick Phinney and Jaime Pohlman

Prescribed fire is an essential tool in forest management; however, many landowners are intimidated by its use. There are also specialized tools and equipment necessary to conduct a prescribed burn that not all landowners may have. This is where prescribed fire associations (PBA) (also called prescribed burn cooperatives) come in! A PBA is a group of landowners and other interested individuals who work together to conduct prescribed burns. Members of the association share expertise, time, resources, and equipment to support each other in conducting prescribed burns. This peer-to-peer mentorship allows landowners to gain skills and confidence to conduct their own burns and, therefore, increase the amount of burning done each year. While each association operates differently, they all have the same goal: promoting the use of prescribed fire as a safe and effective forest management tool.

PBAs were first established in the Midwest, but the concept has become increasingly popular, and these groups have expanded across the US. We are seeing more of these groups forming in North Carolina, South Carolina, Georgia, Florida, Alabama and Mississippi.

South Carolina has three current associations/cooperatives and two more in the works, encompassing 15 counties. The

current associations are Piedmont Prescribed Fire Co-op, Broad River Prescribed Fire Co-op and Chesterfield Prescribed Fire Co-op, and associations are in the formation stages in Aiken and Kershaw counties.



Members of the Aiken Prescribed Fire Cooperative working together to conduct a burn. Photo credit: Janet Steele, Clemson Extension.

Additional information on the value of forming a Prescribed Burn Association can be found here. An interactive map of associations across the US can be found at <https://kstate.maps.arcgis.com/apps/webappviewer/index.html?id=3eacaaf1a3514d3da2e5215b5dd5f9b>. If you are interested in being involved in an existing PBA or forming a new one, contact your local extension office.

Links to current prescribed fire associations/cooperatives:  
Aiken Prescribed Fire Cooperative- <https://www.facebook.com/profile.php?id=61554380421402>  
Broad River Prescribed Fire Cooperative- <https://www.facebook.com/profile.php?id=100089593328205>  
Piedmont Prescribed Fire Cooperative- <https://www.facebook.com/ppfcooperative/>

Additional resource:

The Value of Forming a Prescribed Burn Association (PBA)- <https://southernfireexchange.org/wp-content/uploads/2016-2.pdf>



# Forestry Herbicide Series- Herbicide Basics

By Jeff Fellers

Herbicides are an invaluable tool in forest management for controlling undesirable vegetation. To use them safely and effectively, one must understand a few basic principles. This article is the first in a series of articles on herbicides for forestry applications. To start, we will look at the basic principles one must understand to utilize herbicides. Then, in future newsletters, we will look at specific herbicides commonly used in forest management.

First and foremost, the user must read the label of any herbicide they plan to use. The label is the law and provides directions on how the herbicide can be used safely and effectively. Not following the label can result in poor control, damage to the environment, damage to equipment, and can be harmful to the user. These are just a few of the consequences that can occur from not reading the label.

## READ THE LABEL.

I will admit that the labels are not always easy to read, and some of the terminology is hard to understand. So, let's look at some of the terminology you may encounter on a herbicide label.

### 1. Pre-emergent vs. Post-emergent

- Pre-emergent – interrupts seed germination and keeps new weeds from developing. Typically, pre-emergents do not control established plants.
- Post-emergent – are applied after the plant has become established and typically has leaves. Post-emergents are most effective when applied to plants that are actively growing.

### 2. Residual vs. Non-residual

- Residual – herbicides that continue to be active for days, weeks, or months after application. These herbicides provide extended control.
- Non-residual – herbicides that do not leave an active residue in the soil after application.

### 3. Selective vs. Non-Selective

- Selective – herbicides that target a select group of plants.
- Non-selective – herbicides that can affect any plant on which it is applied.

### 4. Contact vs. Systemic

- Contact – herbicides that must come in contact with the plant and affect the treated part of the plant.
- Systemic – herbicides that are translocated through the plant and can be absorbed by the roots or foliage.

**5. Personal Protective Equipment (PPE)** will be listed on the label and is legally required to be worn to protect the person applying or mixing the herbicide to protect them from contact with the herbicide.

**6. Active Ingredient** is the component that is responsible for the herbicide's toxicity. It is the ingredient that controls unwanted vegetation.

**7. Signal Words** are located on the label to describe the degree of toxicity to the user.

- Danger – highly toxic
- Warning – moderately toxic
- Caution – slightly toxic

**8. Surfactants** are adjuvants that facilitate and accentuate the herbicide's emulsifying, dispersing, spreading, wetting, or other surface-modifying properties. In other words, they make the herbicide work better.

- Anionic Surfactant – enhances foaming and other spreading properties.
- Cationic Surfactant – often toxic to plants.
- Amphoteric Surfactant – used to match pesticide formulations to carrier components.
- Nonionic Surfactant – most commonly used and does a good job of breaking water surface tension.

The label will also give us rate recommendations based on application techniques. Common application techniques in forestry are **foliar, basal, hack and squirt, and cut stump**.

**Foliar** application applies the herbicides onto the leaves of the plant. This is typically done in the growing season when leaves are present and the plant is actively growing. Application equipment usually includes a hand sprayer, backpack sprayer, or ATV/tractor sprayer. Foliar application can be highly effective on smaller vegetation and can quickly cover large areas. Typically, complete coverage of the foliage is essential for control.



Foliar application using a backpack sprayer. Photo credit: Jaime Pohlman, Clemson Extension.

**Basal** application applies the herbicide to the lower 12-18 inches of the stem. The stem must be treated on all sides. A penetrant oil is also required to help move the herbicide through the bark and into the growing layer of the stem. The same equipment used for foliar can also be used for basal applications. Typically, stems need to be less than six inches in diameter and can be applied at any time of the year.

**Hack and squirt** applies the herbicide into an angle cut made into the tree's stem. A machete or hatchet can be used to make the angle cut, and the herbicide can be applied to the cut with a spray bottle. Hack and squirt is a highly selective method and can be used for

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## forestry herbicide series- herbicide basics cont.

larger trees that may be hard to treat with other methods. Applications can be made almost any time of the year except for spring when the sap is flowing. More information on hack and squirt can be found in the article at the following link: <https://blogs.clemson.edu/fnr/2021/07/07/using-hack-and-squirt-method-to-control-undesirable-vegetation/>

**Cut stump** applies the herbicide to a freshly cut stump or stem. The herbicide should be applied immediately after cutting the vegetation. A sprayer, paint brush, or spray bottle can be used to apply the herbicide. This can be done at any time of the year and greatly reduces resprouts or kills the stem.



The hack and squirt application method involves using a hatchet or machete to make an angled cut into the tree and then applying the herbicide to the cut. Photo credit: Jaime Pohlman, Clemson Extension.

When using herbicides, it is essential to maintain your equipment properly. Equipment should be cleaned after each use by triple rinsing. Equipment should

also be calibrated regularly to ensure the labeled herbicide rate is applied to the correct area. Janet Steele has a fact sheet that describes how to calibrate a backpack sprayer at the following link: <https://lgpress.clemson.edu/publication/backpack-sprayer-calibration-for-forestry-uses/>

Reading the label is just the start of understanding how a herbicide works. The user should identify the vegetation to be controlled, what kind of soils they have, and any sensitive areas that may need to be protected. Wind can play a part in the application, as we typically avoid high winds to prevent spray drift. While this article cannot cover all things needed for herbicide application, it is a start to a better understanding. Look for future articles that will go more in-depth about the herbicides commonly used in forestry.

Check out our YouTube page for our Herbicide How-To Series on the different herbicide applications- <https://youtube.com/playlist?list=PLZcWRaJdKpMoZgHNdqAyBo4V-y5jRhngR&si=ws2mwB4DMbKDiCEm>

## County Forestry Associations

**Abbeville County Forest Landowners Association**  
Contact: Stephen Pohlman

**Aiken County Forestry Association**  
Contact: Janet Steele

**Anderson Forestry & Wildlife Association**  
Contact: Carolyn Dawson

**Calhoun-Orangeburg Forest Landowners Association**  
Contact: Janet Steele

**Chesterfield County Forestry Club**

**Darlington/Florence Landowners Association**  
Contact: TJ Savereno

**Edgefield County Forestry Association**  
Contact: Stephen Pohlman

**Greenville Forestry & Wildlife Society**  
Contact: Carolyn Dawson

**Greenwood County Forestry Association**  
Contact: Stephen Pohlman

**Kershaw County Forest Landowner Association**  
Contact:

**Laurens County Forest Landowners Association**  
Contact: Jeff Fellers

**Lexington County Forestry Association**  
Contact: Janet Steele

**Lowcountry Landowners Association (Beaufort, Colleton, Hampton, Jasper)**  
Contact: Amanda Taylor

**McCormick County Forestry Association**  
Contact: Stephen Pohlman

**Newberry County Forestry Association**  
Contact: Jeff Fellers

**Salkehatchie Forestry Association (Allendale, Bamberg and Barnwell)**  
Contact: Janet Steele

**Saluda County Forestry Association**  
Contact: Stephen Pohlman

**Sumter County Forest Landowner Association**  
Contact:

**Tri-county Forestry Association (Berkeley, Charleston, Dorchester)**  
Contact: Amanda Taylor

**Williamsburg County Forest Landowners Association**  
Contact: Tancey Belken

**Contact the Association nearest to you to find out about upcoming meetings!**

# Basal Area: What It Means and How to Measure It

By Stephen Pohlman

If you have had interactions with a forester before or read forestry-related articles, you probably have heard the term basal area mentioned at some point. For some reason, basal area has always seemed to be this mystical term that folks struggle with understanding what it is and why it's important. In this article, we will discuss not only what I just mentioned but also how you, as a landowner, can measure basal area yourself and use it to help communicate with others in the forestry profession.

To understand basal area, one must imagine it as being a cross-sectional measurement of the tree at Diameter at Breast Height (DBH), which is located 4.5' above the ground on the tree. The measurement is typically measured in square feet. Most foresters use a tool (i.e., wedge prism) to accomplish this measurement. A wedge prism is just a wedge-shaped piece of glass calibrated to a 10-factor measurement. Wedge prisms come in two colors, yellow and clear, which really boils down to preference and can easily be bought online from professional forestry supply stores.

Basal area is often expressed as being on an acre basis. It tells us the square foot volume of standing timber for that acre. This is then used to help gauge the density of growth on the landscape. Typically, land with the primary goal of timber production has always been considered to have an ideal basal area when ranging between the values of 80-120sq ft basal area. Once the basal area gets above 120 sq ft, a stand needs to be assessed to see if it is time to be thinned back to 80. If landowner objectives are more wildlife-minded, it's not uncommon for them to want a 60-80sq ft basal area, and they thin timber accordingly. Some wildlife species, such as quail management for example, may target an even lower basal area, usually around 40, within a mature pine stand.

So, how do we measure basal area on an acre basis? Let's start with a wedge prism example. We are going to say that we bought a 10-factor wedge prism. We randomly pick a spot in our forest, and we will try to put the wedge prism over a center point within the spot we chose. We begin walking around the wedge prism while counting 'In' trees. An 'In' tree is when we look at a tree through the wedge prism, and the refracted image we see inside the wedge prism shows us that the image (bark) touches both the tree's trunk above the wedge prism and the trunk below toward the stump. Once we have counted all the 'In' trees as we rotated a complete circle, we then multiply by our 'factor', which in this example is 10 due to the above-mentioned

prism we bought. So, 9 trees counted as 'In' would mean a basal area of 90 (9 trees multiplied by 10-factor prism) for the acre. You may hear the phrase 'Out' trees, and that merely defines trees where the refracted image did not have the tree's barked trunk touching the tree's trunk above and below. Think of it as if electricity had to pass through; you are either connected together or you're not.

As a landowner, you do not have to own a wedge prism to accomplish this measurement process. Years ago, I wrote a fact sheet on how you can make a homemade basal area tool to calculate basal area on your own timber stand. 'Homemade Devices to Determine Basal Area' <https://blogs.clemson.edu/fnr/2021/08/20/homemade-devices-to-determine-basal-area/>. If you are interested in utilizing this method, please visit the provided link to keep this article short for everyone reading. Just remember, when using this homemade device method, your eye is the plot center, and you rotate the object being used around you. This completely differs from a wedge prism because when using a wedge prism, the wedge prism should be the plot center and you walk around it while taking measurements. Also, when using this homemade device method, you are counting the trees that are wider than your object, those are your 'In' trees in this process. Trees that are not wider than your object are 'out' trees. Tally all your 'In' trees and then multiply by 10 due to the calculation. The number is the basal area for that particular spot.

The one situation we've yet to discuss when measuring basal area is what is called a 'borderline' tree. That is a tree that's too close to call if it is an 'In' tree or an 'Out' tree. My rule of thumb (pun intended) is to count the first borderline tree as 'In' but do not count the next borderline tree. Once you have omitted the second borderline tree, you can go back to counting the third one as 'In'. If a scientific determination is needed on your basal area due to you are getting too many borderline trees, please consult a forester for help.

When wanting to determine your stand's basal area, the more plots (measurement locations) you take, the more you can average, and the better determination you can make about your property. Remember to pick the most random spot in your forest stand that you can. Try not to cherry-pick prime spots only because this can skew your data. Also, try not to pick open spots either, as this too will skew your data. Also, you may have a timber stand where one portion is on poor soil, and the trees are not as many or as big as they are near the creek bottom. Thus, it might be good to delineate them as separate areas. The more information you can gather, the more in-depth conversation you can have with your forestry or wildlife professional. Again, management decisions are often best left to a qualified professional, but that shouldn't stop you from starting the conversation with good, knowledgeable information (data) and asking the right questions regarding the numbers collected.



In tree where the bark viewed in the prism touches both the top and bottom of the tree. Photo credit: Stephen Pohlman, Clemson Extension.



Out tree where the bark viewed in the prism does not touch the tree. Photo credit: Stephen Pohlman, Clemson Extension.



# Stumpage Price Trends and South Carolina Climate Smart Forestry

By Puskar Khanal and Crystal Bishop

## Pulpwood Stumpage Trends in Q1, 2024

South Carolina statewide average pine pulpwood prices were \$8.12/ton, and the hardwood pulpwood prices were \$9.21/ton in the 1st quarter of 2024. Compared to the pine and hardwood pulpwood prices in the previous quarter (4th of 2023), it is an increase of 7% and 17%, respectively. The change in hardwood prices is quite interesting. There has been an increasing price trend since Q3'23 for both pine hardwoods. The pulpwood prices for both species are close to the level during Q2'23 (see figure 1). It was above-average rainfall across South Carolina in 2023 and this year. It might have impacted harvesting at low-lying or non-all-weather sites.

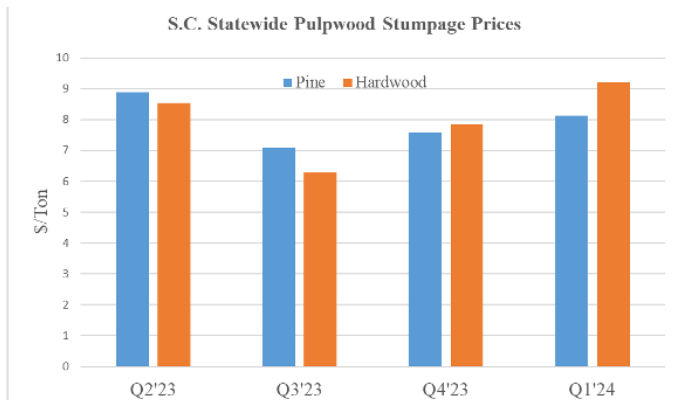


Figure 1. Graph of South Carolina statewide pulpwood stumpage prices for Q2'23 to Q1'24. Graph credit: Puskar Khanal, Clemson University.

## Sawtimber Stumpage Trends in Q1, 2024

The sawtimber prices for both pine and hardwood had a similar increasing trend like pulpwood since Q3'23. The statewide pine sawtimber prices were \$24.15/ton, while mixed hardwood trees sold at \$23.07/ton in the 1st quarter of 2024. The % change in sawtimber prices for both pine and hardwood was less than for pulpwood trees. Current prices for sawtimber trees is about similar to the prices that were in Q2'23 (see in figure 2).

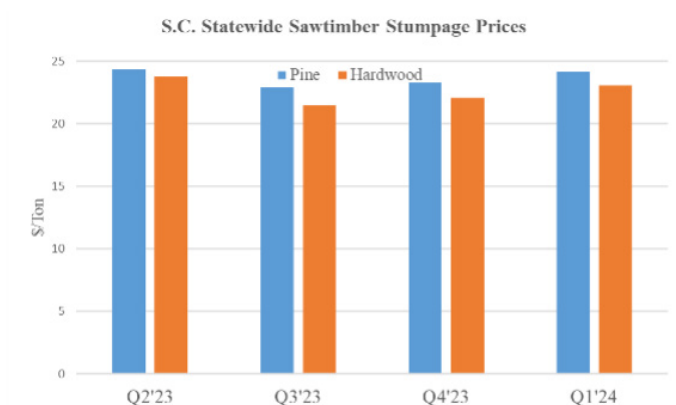


Figure 2. Graph of South Carolina statewide sawtimber stumpage prices for Q2'23 to Q1'24. Graph credit: Puskar Khanal, Clemson University.

Data credit: The sawtimber and pulpwood price data included in this newsletter are published with permission from TimberMart-South Athens, GA 30605 email [tmart@timbermart-south.com](mailto:tmart@timbermart-south.com).

WOOD MARKET IS LOCAL. Stumpage prices for both sawtimber and pulpwood in your local markets could vary significantly as compared to the above statewide averages depending on size and species composition, quality of timber, total acres and volume, logging operability, distance from nearby mills, and overall market condition.

## Climate Smart Forestry- Southeastern Resilient Forests of North America

Climate-smart forestry or CSF refers to forestry management practices that are sustainable, adaptive, mitigate damage and sequester carbon. Depending on how a current forest is managed there may be little change in management to convert it to CSF management. Another goal is that CSF aims to manage future problems that may arise and to sequester carbon, while current management practice goals are to fix immediate problems. With this in mind, this project aims to promote CSF through the Southeastern Forestry of North America.

To promote Climate-Smart Forestry (CSF), Clemson is leading a working group to create a learning environment for forestry professionals to learn and implement CSF practices. Named Southeastern Resilient Forest of North America (SERFN). There are three main contributing states: SC, GA, and AL, along with participating institutions within those states: Auburn University, Alabama A& M, the University of Georgia, Clemson University, and the Southeast Climate Hub. However, we welcome all professional and forest landowners in the Southeastern USA to learn and contribute to CSF practices. We are a working group that combines working professionals of all backgrounds to promote a more inclusive CSF practice for the southeast.

Southern Regional Team on CSF. We are creating an online and in-person platform that makes climate-smart forestry practices and management techniques readily available to forestry professionals and forest landowners. To reach three major groups of forestry professionals, extension educators and agents, and natural resource managers and technicians. SERFN will provide learning opportunities that will encompass in-person and online learning. SERFN has three major categories: mitigation, adoption, and resiliency, that are the backbone of what CSF encompasses.

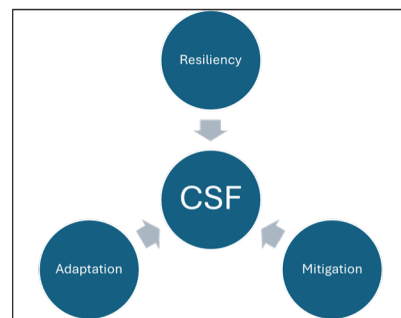


Figure 3. Southeastern Resilient Forest of North America (SERFN) has three major categories that are the backbone of what they encompass.

Connecting with the CSF Team. The SERFN team has a social media page now – <https://www.facebook.com/people/South-Eastern-Resilient-Forest-of-North-America/61556717288344/>



Several members of our Clemson Extension Forestry and Wildlife Program Team and specialists. Team members from left to right include: Jaime Pohlman, TJ Savereno, Ryan Bean, Patrick Hiesl, Matt Burns (Extension leadership team), Jeff Fellers, Janet Steele, Cory Heaton, Stephen Pohlman, Derrick Phinney (team leader). Photo credit: Kathy Coleman, Clemson Extension.

## Contact our Agents:

<b>Agent</b>	<b>Email</b>	<b>Counties Covered</b>
Vacant		Chesterfield, Fairfield, Kershaw, Lancaster, Sumter, Richland
Tancey Belken	<a href="mailto:tanceyc@clemson.edu">tanceyc@clemson.edu</a>	Berkeley, Charleston, Florence, Georgetown, Horry, Marion, Williamsburg
Carolyn Dawson	<a href="mailto:dawson4@clemson.edu">dawson4@clemson.edu</a>	Anderson, Cherokee, Greenville, Oconee, Pickens, Spartanburg
Jeff Fellers	<a href="mailto:fellers@clemson.edu">fellers@clemson.edu</a>	Chester, Laurens, Newberry, Union, York
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<b>Specialist</b>	<b>Background</b>
Lance Beecher	Aquaponics, Aquaculture and Fisheries
Dave Coyle	Forest Health and Invasive Species
Cory Heaton	Wildlife Management
Patrick Hiesl	Forest Operations and Forest Products
Puskar Khanal	Forest Economics
Marzieh Motallebi	Ecological Economics and Carbon Credits

Newsletters are archived online at:  
<https://www.clemson.edu/extension/forestry/resources/newsletter.html>

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