Winter’s First Defense: Why Your Apple Orchard Needs Copper Now (published 2026-02-28)
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There is a particular kind of stillness that settles over Washington County in the deep of winter. When the frost is thick on the lawn and the sun is just a pale promise over the ridge, my orchard looks like it’s fast asleep. I have ten young heirloom apple trees, none of them more than five years old. Now is the time to use the quiet window of winter dormancy for preventive care.

What we do while the trees are "sleeping" is just as vital as the thinning and harvesting we do in the heat of July. Winter spraying isn't a chore to be put off; it is the first line of the home-guard for the entire growing season.

It’s understandable why dormant spray care may be skipped.

- Lack of visible signs: Because there are no wilted leaves in January, many believe the trees are unthreatened.
- Cold weather avoidance: It is rarely pleasant to be out with a sprayer when the mercury is low, leading many to wait for better weather which is too late.
- Misunderstanding pathogen survival: Many don't realize that canker-causing fungi like *Botryosphaeria* can live in the tissue with no signs of disease until the tree is stressed, giving the fungi the chance to cause dieback.

However, we need to consider the disease triangle: the interaction of a host, a pathogen, and a favorable environment. During winter, the host (tree) is dormant, the environment is too cold for activity, and some may think that the pathogen is gone. This leads to a false sense of security.

The truth is those pathogens aren't gone. They are simply overwintering - hunkered down tighter than a tick in the bark crevices and bud scales. If you wait until you see the damage in April, the pathogen has already won the first round of the triangle. By then, you aren't protecting; you're playing a losing game of catch-up.

Keep in mind that fungicides protect healthy plants. They are not rescue or curative treatments. Once a leaf or fruit is infected, you can't undo it. You must create a protective barrier before the trouble starts.

Copper is the heavy hitter against both bacterial and fungal threats. It is the gold standard for managing fire blight, a devastating bacterial disease that can turn a healthy shoot into a blackened, hooked mess called a shepherd's crook almost overnight. Copper also provides a protective barrier against scab by preventing spores from germinating when the weather warms.

We also have to worry about weak pathogens like canker diseases and cedar-apple rust. Rust spores travel from those gelatinous orange tendrils on nearby eastern red cedars every spring. A well-timed dormant spray keeps these threats from gaining a foothold on the host side of our triangle. Without this barrier, our heirlooms are sitting ducks as soon as the sap starts to stir.

Timing is everything. We have to synchronize our actions with the tree's metabolic state. If we spray too early, the protection wears off. If we spray too late, we risk plant burn (phytotoxicity). Once those flower buds swell or open, the environment part of our triangle has shifted, and the tree becomes much more sensitive to damage.

Following the logic of diseases like peach leaf curl, we need to target a very specific window starting in the fall. Your first application needs to be done when 50 percent of leaves fall to catch spores as they settle in for the winter. Then the most critical follow-up happens during deep dormancy.

How you spray is just as important as what you spray. You could have the best copper sulfate available, but if it doesn't reach the pathogen, it won't do a lick of good. Here are tips for a successful application:

- Uniform coverage: You must spray until the point of "runoff." This means the liquid should be literally dripping off the wood. Ensure the trunk and every nook and cranny of the bark is coated.
- Weather selection: Choose a day with no wind and temperatures above freezing. Many of these sprays function as salts, and they need to dry properly on the wood without freezing to be effective.
- Safety first: As the law and common-sense dictate, always read the label on the pesticide before use. It's the only way to ensure you use the proper personal protection equipment and the right concentration for your specific trees.

A good dormant spray is key, but it's only one part of the management strategies that integrate a range of practices required for a healthy orchard. Make sure you have healthy soil and properly pruned trees.

High-value fruit is the result of a year-round commitment to the trees' fitness. If you take care of the trees through proper soil management and pruning, the dormant spray becomes the shield that ensures all that hard work pays off come harvest time.

Resources

"Plant Diseases," https://mastergardener.tennessee.edu/chapter-14-plant-diseases/

"Insects and Diseases Affected by an Oil or Copper Spray," https://pestadvisories.usu.edu/2025/03/24/oil-2025/

"Soil Management in Residential Gardens and Landscapes," https://mastergardener.tennessee.edu/chapter-6-lawn-and-garden-soil-submission-sheetchapter-6/

"Pruning and Training Apples Trees," https://extension.umn.edu/growing-apples/pruning-and-training-apple-trees

"Backyard Fruit: Fruit Tree Pruning," https://www.youtube.com/watch?v=Z-lEyjrvjkc

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If you have questions for the Master Gardeners, submit them to us on our website at www.netmga.net. Click the link at the top of the page, “ASK A MASTER GARDENER” to send in your question. Questions that are not answered in this column will receive a response from a Master Gardener to the contact information you provide.