

Pine Needle Composting OR How I Learned to Love Pine Needles



By Frank Branham

Note: Wow, there are a lot of falling pine needles falling this year. We thought it would be helpful to rerun Frank Branham's column from 2019 so you can put those needles to use.

Flagstaff is located in the largest continuous ponderosa pine forest in the world. We love those beautiful trees but all the fallen pine needles can be a challenge. Most people with ponderosa pines collect 20 to 30 bags of pine needles a year. What if all of that pine straw could be turned into compost, a nutrient-rich soil-like material created by decomposing organic matter? This would save space in the landfill while creating a healthy soil amendment.

Many gardeners and composters believe it is not worth the trouble to compost pine needles because they take too long to break down, or they are too acidic, or they do not have any nutritional value for plants. However, the Washington State Master Gardeners Association spent two years experimenting with pine needle composting and was very successful. They challenged Coconino Master Gardeners to continue the project. We added to their research while making nice rich compost from pine straw.

Pine needle compost has been shown to have a Ph of 6.5 which most people would consider neutral. Since Northern Arizona soil tends to be alkaline, adding compost with a pH of 6.5 would be a positive for many gardens.

It is true that pine needles do not have much nutritional value for plants, but they are loaded with a nutrient needed for composting - carbon. The composting organisms need a balanced diet of carbon and nitrogen. Carbon-rich materials called "browns" include straw, dried leaves, and pine needles. Nitrogen-rich materials called "greens" include coffee grounds, vegetable scraps, and manure. In compost piles these ingredients are combined: two parts browns to one part greens. In addition, composting organisms need moisture and oxygen. Generally, compost should be as damp as a wet sponge. Oxygen is provided by ventilating the pile and by turning it to expose more compost to the air.

There are good reasons gardeners believed pine needles will not compost. Ponderosa pine needles are seven inches long and are coated with a thick cuticle that protects them. The solution is to break them into smaller pieces exposing more surface area. A lawn mower, shredder, or chipper can be used to break up the needles. My device of choice is a lawn mower because it is quick and used lawn mowers are readily available in Flagstaff. I run the lawn mower over piles of pine needles on my walkway three times, which chops them into smaller pieces. It takes about an hour to grind the equivalent of 5-6 garbage bags into a pile half that size. Soaking the ground needles in water for 24 hours makes them easier to compost.

Because pine needles are resistant to composting it helps to use "hot" composting techniques. That means using hot greens which are very high in nitrogen such as grains, manure, coffee grounds, or blood meal. Premixing pine straw with the hot greens will help to speed up the process. This technique may generate heat between 125 and 150 degrees. Frequent turning will help to maintain higher temperatures. It takes about two months of hot composting to further break down pine needles. In the first few weeks, the greens will break down, but the pine straw will remain intact. Since the pine needles still have plenty of carbon, adding more greens will keep the pile hot without making it anaerobic.

After 2-3 months let the pile sit, undisturbed, so the bacteria can finish their work and let the pile cool down. If worms have access to the compost at this time they will continue to break down both the pine needles and other organic matter. It will be necessary to strain this compost to remove whole needles, sticks, and other debris.

Pine straw can be a free source of high-carbon material for composting while saving space in the landfill and cutting down on plastic waste in the environment. If you are an experienced composter this should provide you with enough information to get started.

Frank Branham is a Coconino Master Gardener, president of the Coconino Master Gardener Association, a retired chef and former owner of The Cottage Place Restaurant, and an avid composter.

The next Master Gardener class will be in-person starting on January 23, meeting on Tuesday afternoons from 1:00 to 4:30 in Flagstaff. For more information, go to:

<https://extension.arizona.edu/coconino-master-gardener>.