

# Establishing forages in new silvopasture

By Brett Chedzoy  
and Joe Orefice, PhD

A silvopasture is only as good as the quantity and quality of forages growing in it. Letting more sunlight reach the ground by thinning trees is the first step toward developing productive silvopastures (see March 2018 *Graze*). This time around we'll discuss forage establishment, and leave forage management for the next article.

There is more than one way to get forages growing in your silvopastures, so Brett asked fellow Extension colleague and friend, Joe Orefice, to contribute his experiences and expertise to this topic as well. But before getting into the tales of our two farms, let's start with the basics.

All good gardeners, farmers and graziers recognize that there are several "musts" for seed germination: good seed-to-soil contact, adequate moisture and temperature, and providing the right environment for the seedling to emerge from the soil surface without interference.

The seed can't be buried too deep, nor smothered with leaves. Some forage plant seeds need a little more sunlight than others to trigger germination.

So how do we ensure that these conditions are met when developing silvopastures from wooded areas? Let's begin by thinking about the typical starting conditions.

## *Dealing with duff*

Woods usually have undecomposed leaves and other dead plant material blanketing the ground. This is known as the duff layer, and it can act just as mulch does in keeping weeds from growing in the shrubbery around your house. In other words, grasses are going to struggle to grow through it.

In addition to the duff, most woods also have a layer of vegetation growing close to the ground surface. This could include native plants like ferns and raspberries, or non-natives like garlic mustard and "invasive" shrubs. Often these are plants can't be removed during thinning (tree cutting) because they're just too small.

These plants act as an umbrella over the otherwise partially sunny spot where you would like to grow forages. As with thinning, there's more than one way to deal with the duff and low plants.

On Brett's farm, the goal has been to achieve adequate disturbance as a byproduct of the thinning process. Finding the right balance between "just enough" (light, uniform soil scarification) and "too much" (rutting, compaction, root damage and erosion) can be tricky, especially when working in the woods with heavy machinery on less-than-ideal ground conditions.

The 2015 timber harvest mentioned in the last article was intentionally timed for mid-summer so that the tree skidding would take place when there was no snow on the ground to muffle the impacts. The idea was that if it were done during the growing season instead of the dormant period, the crushing, cutting and trampling of the low plants (mostly small diameter beech suckers, hornbeam and hemlocks) would help to suppress re-sprouting and recovery of these plants.

Three years later, the results looked mixed. Germination of the existing seedbank and broadcast forages was good where there had been enough scarification. The problem was that scarification was not consistent, as it tended to be concentrated along skidding pathways.

Another problem was the historically high amount of rain that fell during the June and July logging and delayed completion until early August. By then, nature was trying to balance itself in the form of a nearly rainless late summer and autumn.

The seeds wanted to germinate, but many of them couldn't due to lack of moisture. Many that did make it to the seedling stage burned up before getting established.

A third problem, in hindsight, was that the many hundreds of harvested trees were fully leafed-out when cut. This was like scattering hundreds of tarps across the woods, each shading out a patch of potential cow food.

### ***What worked, what didn't***

Still, a lot of forages did germinate that fall. The main skid road system proved a perfect seedbed for the diverse forage mixes that were broadcast.

Beyond the roads, the ATV and spreader went where it could to broadcast triticale into the surrounding slash. Three teenagers got some good cross-training workouts slinging seed by hand from five-gallon pails.

The triticale had three purposes: inoculating the forest soils with a grass plant to improve conditions for more grasses to colonize the site the following season, establishing something edible among the logging debris to attract cows into the tops and brush piles, and attracting our abundant wild turkey population into these areas to help with the ongoing soil scarification.

Unfortunately, the triticale was sowed too late to make grain that year, and most of it either failed to overwinter or survive the onslaught of spring herbivory long enough to head out the following summer.

Bale grazing helps a lot, though. Well before this 2015 harvest, winter bale grazing had been playing an important role in adding forages to Brett's silvopastures. Despite his best efforts to make quality hay, most bales contain plenty of viable seed.

Once things freeze up and the herd finishes the last of the stockpiled pasture, rotational bale grazing is shifted to the approximately 170 acres of silvopasture on the farm. If ground conditions turn soggy, cows are moved away from the trees until things freeze up again.

By the following summer, every spot where a bale was fed has become a fertile patch of green. If baleage or nearly seedless second-cutting was fed, these bale circles also rot into perfect seedbeds for sprinkling whatever will grow in light shade.

Not much work has been done in the Northeast on shade tolerance for different forages, but most cool-season grasses do quite well in the dappled shade of silvopastures. Different forages grow best at different sites and in varying conditions, so a diverse mixture that contains lots of orchardgrass and a little bit of everything else seems to work best.

### ***Comparing tactics***

Joe has also had great success with bale grazing on his farm near Saranac, New York. He uses this method primarily in areas where the goal is to smother shrubs and brambles and/or to rapidly improve soil fertility. A "bale bomb" on top of unwanted plants is rather effective, and the mixture of manure and "wasted" hay is an excellent topcoat.

In 2012, Joe started a research project on his farm to look at the dynamics of different forages and the ecology of converting forestland to silvopasture, open pasture and a silvopasture treatment where cows and forages were not added for two years.

The site was "whole-tree" harvested and broadcast with cool season grasses and Ladino clover in late August. Stumps were cut low and left standing because cows can walk over them, and pulling them inevitably would have a Velcro effect on the roots of residual timber trees.

The whole-tree harvest provided excellent ground scarification because it was done in the summer on dry soil. It also minimized the amount of slash left behind.

While Joe quickly became a fan of orchardgrass, almost all of the small-seeded grasses germinated well on the fresh ground. Orchardgrass, perennial ryegrass and timothy stood out.

Smooth brome did not germinate well, probably because the seed is too large to do well without direct incorporation to the soil. Tall fescue was not part of the trial.

Ladino clover established but mostly faded out because soil pH was 4.5 and the deer couldn't resist it.

Now a mixture of red and white clover is used for seeding silvopastures, although some calcium should still be added to the mix.

Joe's best suggestion for choosing what to seed is to look at the forages growing best along the field edges of your farm. They are telling you something.

## ***Do it right away***

For Joe, it is critical to establish forages within the first growing season after thinning a forest, as this is when there is open space and sunlight. If we don't fill that space, nature will do it for us.

In his trial, the replicates where grass was not seeded and grazed saw nature fill the space with tree sprouts, woody shrubs and brambles. Now it will take a lot of time and energy to make room for grasses. Bale grazing is working, but is a slow process over many acres of land.

One of the things Joe likes so much about orchardgrass is that where it was seeded immediately after harvest and periodically grazed, it out-competed many of the brambles and woody plants.

And that is the ultimate goal of forage establishment: Create a system where grasses win because of our management.

Converting a forest to a silvopasture is a delicate process.

## ***Taking it home***

Take-home points about forage establishment are:

- Do not to destroy the roots of remaining trees during site preparation.
- Test your soil and give it the nutrients and preparation it needs.
- Take advantage of exposed soil to seed forages.
- When all else fails, drop a round bale on it.