

Grazing Sheep in Christmas Trees: A Guide for Shepherd and Tree Grower Success



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Introduction

Intercropping, the agricultural practice of raising two or more commodities in a single land area, is becoming more necessary and popular. One form of intercropping is grazing Shropshire sheep among Christmas trees. The weeds inhibiting tree vitality are excellent forage for the animals. With their aversion to woody plants, Shropshires have been successfully grazed in European vineyards, orchards, and Christmas tree plantations.

While it's seemingly simple to just put animals in a tree patch, grazing in Christmas trees can have numerous, and sometimes surprising, challenges to implement successfully. The following recommendations for grazing sheep in trees come from our 2024-2026 study, funded by the North Central Region Sustainable Agriculture Research and Education program (NCR-SARE). We compared weed control methods in Christmas trees: conventional methods of mowing, mulching, and spraying compared to grazing Shropshire sheep within the trees.

These observations and recommendations may be used as a baseline for implementing a sheep-based weed control program in Christmas trees. Each site may require modifications based on climate, soil type, ground cover, equipment availability, or other factors. However, the Shropshire breed—noted as avoiding rough forage, such as woody growth—is considered essential for this application as other breeds have been detrimental in an intercropping enterprise such as this.

This guidebook is intended for established tree growers working to manage weeds, as well as for shepherds seeking more grazing opportunities with Shropshires.

The Role of Shropshire Sheep in Christmas Trees



Shropshire sheep grazing in Canaan firs.

Shropshires seem to be more extensively used in Europe than in the U.S. for weed control in orchards and vineyards, as well as in Christmas tree plantations. However, there appears to be little documentation on guidelines or best practices. Most information we have found is anecdotal and/or limited in specific details.

Through our study, we found that using Shropshire sheep as weed control agents saved time and cost. The sheep lived in the trees through the entire growing season, regardless of weather. Mowing hours rose during periods of increased rain. Upfront costs for the sheep, such as for infrastructure and more ewes, were high compared to the conventional practices, but were one-time expenses that can be used over multiple years. Fuel, mulch, herbicides and other

expenses related to conventional weed control, while initially lower, are recurring, non-recoverable costs. Shropshires also can provide income while waiting for the Christmas trees to reach harvestable size, as the sheep provide meat, wool, and lambs for sale.

Goals for Grazing Sheep in Christmas Trees



Canaan firs before and after grazing.

Establishing an intercropping enterprise has many benefits. Here are three potential reasons to graze Shropshires in Christmas trees:

1. Efficiency: Sheep like to eat every day, and when what they eat also happens to be weeds in Christmas tree plantations, creating paddocks in the Christmas trees is a win for both sheep and human.

2. Simplicity: Animal care and tree care remain the same, even if the two enterprises are combined. Each enterprise can benefit from the other: sheep with grazing weeds and older, taller trees with providing shade.
3. Speed: If the tree producer has an off-farm job, it can become difficult to make time for each mowing pass. Labor and time savings that will help us produce a great Christmas tree, as well as a healthy ewe and lamb, are essential.

Equipment Needed



A Shropshire flock before entering the Christmas trees.

The following equipment is needed for grazing sheep in Christmas trees:

- Shropshire sheep (as noted above, considered essential for this application as other breeds have been detrimental in an intercropping enterprise)
- Electric netting (measure tree plantation perimeter to determine how much netting is needed for a perimeter fence; then add in enough to create cross-paddocks)

- Solar energizer for netting (recommend a solar panel with a glass face and an all-in-one solar charger for easy mobility; solar carts can also be constructed easily with a cart, deep-cycle marine battery, and high-powered charger)
- Water source (we used a 275-gallon IBC tank, filled once a week, adding a chlorine tablet or apple cider vinegar to prevent algae, bacteria, or mold formation)
- Hose
- Automatic float valve
- Water tank
- Sheep mineral
- Mineral feeder
- Livestock scratch brushes
- Shade source, such as a hay wagon or portable shed
- Portable corral gates



An example of a shade source.

Getting Started

1. Analyze the forages found within the tree plantation. Even though legumes and grasses are undesirable growing next to the trees, these plants are great for sheep grazing.
2. With the forages identified, calculate how many sheep are needed to keep weeds manageable. We found ten sheep per 100 trees (planted in a 7'x7' grid pattern) rotated every three days worked well for our patches of 500 trees.

3. Measure tree patch for fencing.

These measurements determine how much perimeter and cross fence you need to create paddocks for the sheep to rotate through.

- a. Measure the perimeter of the tree patch where you would like to place the sheep.
- b. Measure the distance from one side to the other.
- c. Determine how many paddocks (subdivisions) you would like within the tree plantation.
- d. Map out an area outside of the trees where the sheep can go when they've eaten all of the forages down around the trees and need to be removed from the tree plantation.

4. Set up netting around the tree plantation and the extra paddock. Establish a solar charger in a sunny area to optimize sunlight capture.

5. Establish your water source inside the paddock. Some options include:

- a. IBC tank connected to a float in a water trough
- b. Small water tank on the back of an ATV or RTV to haul water each day to trough
- c. Hydrant in trees and water every day
- d. Hydrant connected to a float valve in a water trough



An IBC tank connected to a float in a water trough. The wagon also serves as shade for the sheep.

6. Secure your shade source. This can be a hay wagon on which an IBC tank for water sits or a portable shed.

- a. Recommendation: set wagon and shade source a few feet away from Christmas trees due to possible soil compaction and tree damage. We found a 14-foot aisle didn't leave enough room between the trees and shade wagon. Sheep lay under wagon and could potentially run into larger trees. Sheep could more easily avoid smaller trees when the wagon was in the aisle.

7. Install scratch brushes in the paddocks, whether on a permanent or portable installation, such as a shade wagon or portable shed.



An example of a scratch board hanging on the rear wheel of the shade wagon.

8. Put the sheep in the trees, turning on the solar charger to electrify your fence after doing so.
9. Move the sheep to the next paddock when the sheep have eaten to grass down to 4" between tree rows or less than 4" around the trees. Close them out of the previous paddock so that the forages can regrow.
10. Monitor how the sheep treat the trees. If individual sheep seem to be treating the trees more roughly than other sheep, continue observing and consider if they need to be removed from the trees.

11. When completing grazing in the final paddock, observe the forage quality in the first paddock and determine if sheep can be returned to the first paddock within the trees or if they need to be removed from the trees for a short amount of time.
12. Begin again with Step 8.



Shropshires grazing a 50-tree paddock in the background; in the foreground is their next paddock to graze.

Making Observations

Each day while checking on the sheep, make observations about sheep, forage, and trees. Monitor forage growth and species, sheep welfare, and tree health. Watch how the sheep react to the trees. If there are any that seem to rub their heads against the trunks or chew on trees for recreation, consider removing that sheep. Watch grass growth closely to ensure the sheep have

plenty to eat. Observe if the sheep are eating around the trees sufficiently to prevent forages stealing nutrients from the Christmas trees and observe if any forage species in the trees are changing due to grazing.



Shropshires grazing next to a Canaan fir.

For example, overgrazing can lead to more thistle growing within a tree plantation if that weed seedbank is disturbed. Forage sampling is a great tool for ensuring your sheep receive the nutrients they need from the grasses, legumes, and forbs out in the Christmas tree patch.

Ensure the sheep don't run out of forages before moving to the next paddock. Match stocking rate to vegetation growth. The number of animals in a paddock can be adjusted

based on available forage. With faster grass growth in the spring, a greater number of sheep can be moved more quickly early in the season. Movement can slow and fewer sheep grazed as the grass growth rate declines during hotter or drier times of year.

If the grass is being eaten faster than it grows, remove animals to balance the stock rate. If you see that the sheep aren't able to manage the grass with their current numbers, add animals to the paddock to ensure they can keep up with grass growth.

With the right stocking rate, there can be some predictability with moving the sheep. If you want the animals to move every two days so that you have a consistent schedule of moving

the sheep and their equipment, the number of animals can be monitored and adjusted based on growth rate and vegetation.

Notes on Tree Care

Our research project focused primarily on Canaan fir (*Abies balsamea* var. *phanerolepis*), and Concolor fir (*Abies concolor*). In our final grazing season, we added Korean-balsam fir (*Abies koreana* x *balsamea*) and Turkish fir (*Abies bornmuelleriana*) to our tree patches.



This Turkish fir, standing in the corner of the paddock, was grazed around but not touched by the sheep.

There were also a few Eastern White Pine (*Pinus strobus*) in a patch that had been previously ravaged by white tailed deer. The sheep did consume the tender needles of these scrawny pines, finishing their destruction at the start of the study. However, the fir trees generally fared much better. Shropshire-crossbred lambs introduced into the Christmas trees chewed on fir needles, which emphasized the need for purebred Shropshires to be out in the trees.

During the 2025 National Christmas Tree Association meeting in Michigan, a Christmas tree producer from Scotland noted that he grazed Shropshires in Fraser firs. He said it “takes

more management” to graze sheep in trees. Even though it may take more management, grazing sheep in Christmas trees can save time and effort when controlling weeds.

However, damage can still occur in certain circumstances. In smaller trees, the sheep didn’t bother the trees. They were mostly ignored, and there was no damage.

However, in Year 2, the sheep grazed in larger trees with three years growth (on average, three feet tall). Some of these bigger trees were used as scratching posts. Branches broke off.

When we added scratch brushes as enrichment activities, the amount of tree scratching diminished.

There could be a few reasons the sheep scratched their heads against the trees so often. During our second grazing season, Summer 2025, we experienced severe drought, which limited grass growth. As the most



With plentiful forage around the Christmas trees, grazing sheep in the trees is a good opportunity for gaining extra grazing land.

desirable grasses diminished, the animals exhibited tree damaging behaviors, presumably due to frustration, boredom, or hunger.

During our third grazing season, summer 2026, we were drought-free, with rain and thunderstorms providing lush grass. We also created bigger paddocks. Instead of 50 trees across two days, the sheep grazed among 100 trees across three days. Head scratching was nearly nonexistent.

Other factors besides adequate forage availability may have also played a role in reducing damaging activity during the third season. We added scratch brushes and scratch pads. The opportunity for a more satisfying scratch may have mitigated their desire to damage the trees.

Finally, we replaced some ewes after our second season of grazing. These animals had traits closer to the original Shropshire type found in Britain and seemed to demonstrate more favorable behaviors amongst the trees.

The sheep can remain within the trees throughout the entire spring and summer but must be removed prior to breeding season in the fall. Breeding activity will likely cause extensive damage.

Maintaining Animal Welfare



Elise Koning checks Shropshires in a portable corral next to the Christmas tree patch where they've been grazing.

As with any livestock, provide a complete mineral for all sheep out in the trees. If needed, supply supplemental feed, such as grain. When using grain feeders, ensure that the sheep will not back up or run into trees as they eat or run to the feeder, as they can accidentally injure the tree.

Sheep grazing in Christmas trees may be a long way from a barn or other permanent structure where they can be gathered and cared for. Portable corrals are a great solution for sheep health checks during the grazing season. Specially made corrals or modified gates from a local farm store can be used.

Our portable corrals were created from metal gate panels with brackets installed on both ends. We then used rods to connect the gates as a corral for easy set-up and tear-down. The sheep can then be penned in this enclosure and easily managed with proper animal handling techniques.

Be sure to establish a relationship with a local veterinary clinic, which will be a resource for any health questions that may arise.

Notes for Christmas Tree Growers

A tree farmer does not necessarily need to own sheep but can collaborate with a shepherd experienced in custom grazing instead. Consider the following when inviting sheep onto your tree plantation for the first time:

- Provide an easily accessible water source.
- Planting cover crops between tree rows are a great way to provide forage for sheep. Consult the Cover Crop Guide from the Midwest Cover Crops Council to determine what species to plant.
- Irrigation lines can potentially suffer damage from hooves, so when working with a custom grazer, ensure irrigation lines can withstand hoof pressure.
- When shearing trees, communicate with the shepherd to ensure sheep will be in another area of the plantation.
- Be observant. Take before-and-after pictures and work closely with the shepherd to minimize tree damage and overgrazing.
- Communicate often, letting the shepherd know of any challenges with the sheep.

Final Recommendations

There are several ways to graze sheep in Christmas trees. For our study, we allowed grass to grow in the tree rows. However, tree producers can choose how much or how little mulching, spraying, or mowing is done, combined with the sheep.

One method is to mulch and spray trees before putting the sheep in. This will allow the weeds to die off, and the mulch helps with keeping the weeds down. The sheep can then concentrate on eating between the rows and anything that wasn't sprayed in



Weed-free Canaan firs after sheep have grazed around them.

the rows. Do not put sheep in immediately after herbicide use. Check all labels and use according to labels.

This method can help the sheep control the weeds. We found that the sheep seemed to do a better job of controlling weeds that grew next to the trunk of trees than herbicides. Even after we sprayed in our control patch, weeds still grew next to the trees.

But in the sheep grazing paddocks, the sheep continued to eat the weeds that grew all summer.

If the desire is to go entirely chemical-free, carefully monitor the sheep to ensure they have plenty of forage and they don't begin to rub their heads against the trunk.

Conclusion

Grazing sheep in Christmas trees is rewarding, cutting down on the amount of time spent on the mower. When sheep producers or Christmas tree growers face limited time or land access, intercropping with sheep and trees can be a good solution to solving those two challenges. There are some challenges and a learning curve, but with patience and careful observation, grazing Shropshire sheep in Christmas trees while still growing a marketable Christmas tree is possible and enjoyable.

Thank You

Thank you to the North Central Region Sustainable Agriculture Research and Education program for funding our study.

Appendix A. Supplies We Used

The following list is the equipment used in this study. It is intended as a guideline only and not an endorsement. Additional or fewer items may be needed for different applications.

- From Kencove Farm Fence Supplies:
 - Fencer's Choice 14/48"/3½" electric netting, 82' and 164' lengths
- From Premier 1 Supplies:
 - Solar IntelliShock® 120 Energizer
- From Rural King:
 - Tarter 6' gate panels
 - Dare farm tank float valve
 - Weaver Leather large round feed pan
- From Sydell Inc.:
 - 25lb Mineral Feeder with Round Base
- From Menards:
 - National Hardware 2" pipe gate hinges
 - ½" x 4' rebar stakes
- Miscellaneous or sourced used:
 - 7' x 14' farm hay wagon
 - food-grade IBC tote
 - crossover style pickup truck box
 - garden hoses
 - bulk apple cider vinegar
 - pool chlorinating tablets
 - hitch pins
 - wheel chocks



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