



# Big Foot Food Forest

Babydoll & Shetland  
fiber products  
Lambs  
Nuts and berries  
On Silvopasture



Total Eclipse, Babydoll lamb



Hand-combed roving from our two Shetlandds



Silvopasture with sheep and honeylocust at Virginia Tech, photo by Angus Unruh used with permission





# About us, the sheep and the trees



We are a small, 36-acre farm in Montague (Western Mass). We started in 2019.

We currently have 15 sheep - pure babydoll and mixed shetland-santa cruz. We chose these sheep because they are small (possible for a 60+ farmer lady to handle), have beautiful fleece, and the live lambs are desirable for homesteaders/small farms.



From outset, we wanted combine sheep and nut trees to improve the profitability of our farm - and make farming more fun! Read on to see how this combination - silvopasture - helps us.

Get inspired!.







# What <sup>*the heck*</sup> is Silvopasture?

Silvopasture is the practice of integrating managed trees with grazing livestock on the same paddocks.



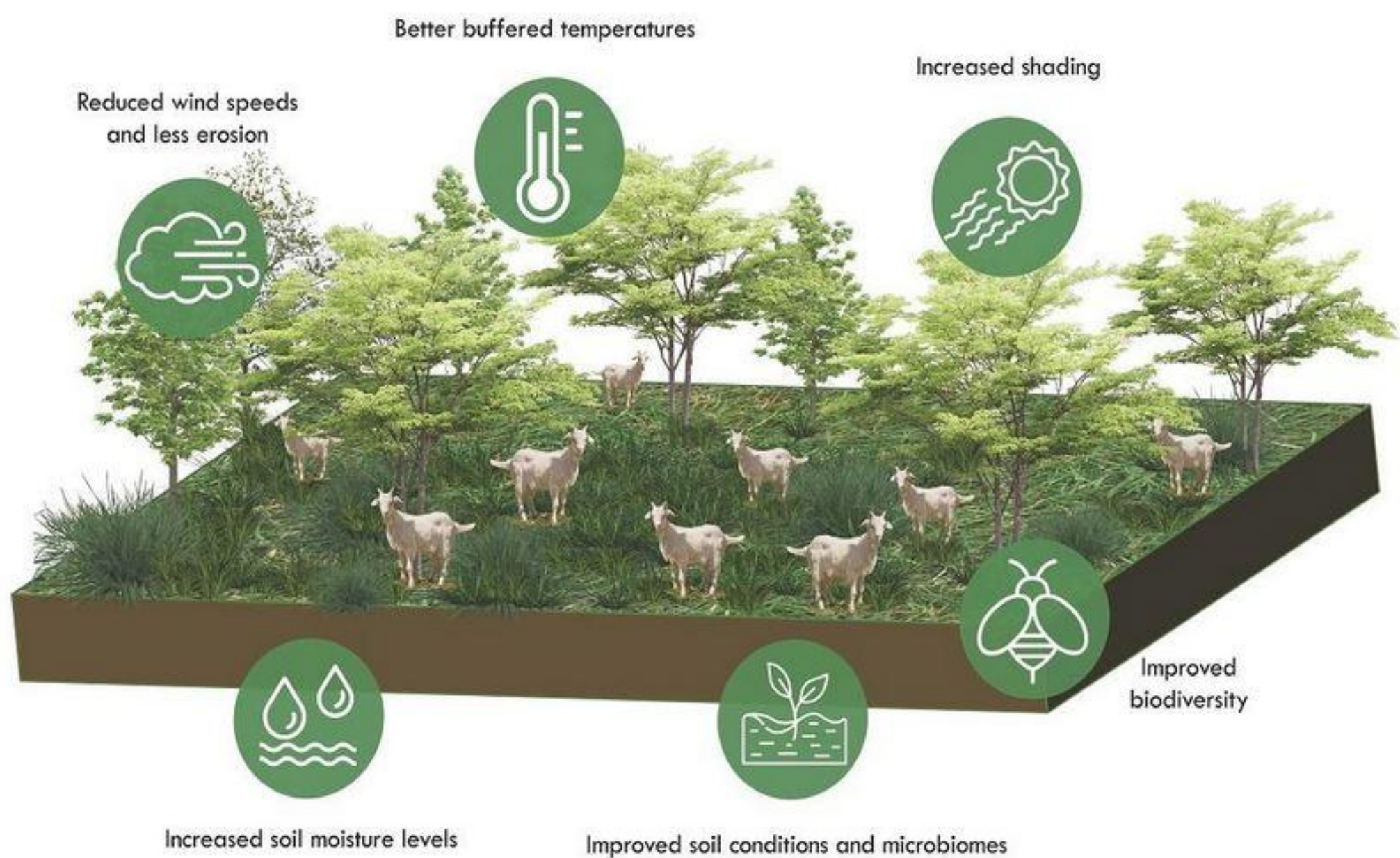




# Why *bother with* Silvopasture?

Silovpasture is always beneficial but the challenges of climate disruption make it critical. In the face of heat, drought, and extreme weather silvopasture offers:

- Healthier sheep
- More resilient pasture
- Reduced hay feeding costs
- Additional income from trees



Silvopasture system





# Climate problems for sheep in the Northeast by 2040:

## Poorer sheep health & higher farm costs

**MORE HEAT** - number of days over 90 degrees likely to triple



**RAIN and FLOODS** - the number of extreme rain events (and flooding), likely to double.

Photo of flooded field in Western Mass 2023

**MORE DROUGHT** - at the same time, 1-3 month dry spells will increase.

Photo of dried up pasture New Hampshire 2022







# Heat Stress and Sheep

## **Fewer, less healthy lambs.**

Sustained exposure to high temperatures (>90 degrees) or high Temperature-Humidity Index (> 72) reduces ewe and ram fertility, and leads to lower lamb birthweights, decreasing lambs' survival rate.



## **Poorer sheep health.**

Heat-stressed sheep eat less, and are less able to absorb minerals and nutrients from feed. This leads to poorer nutrition, lower immunity, higher susceptibility to diseases, and lower production of milk and meat.

**All of these impacts of higher temperatures/humidity not only hurt sheep, but also cost farmers time and money.**



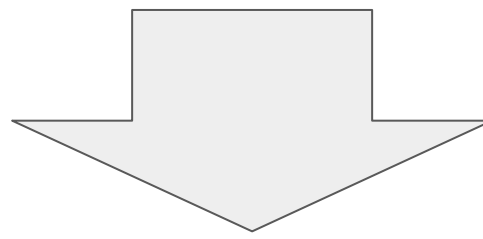


# Rain and flooding and sheep

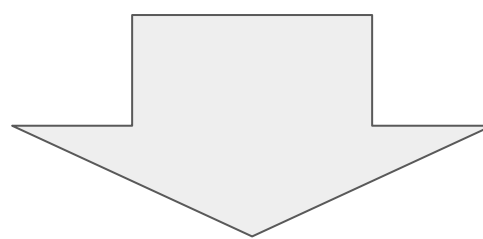
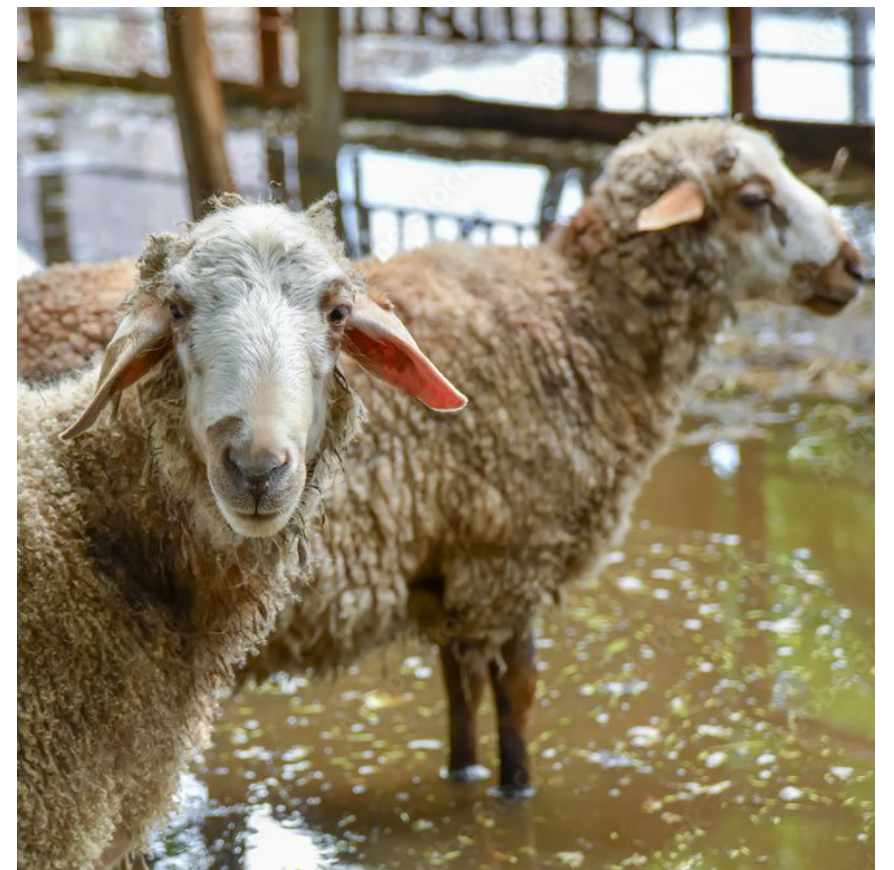
Open pastures  
(often poor  
drainage)

+

More  
excessive  
rainfall events



Increased risk of flooding and standing water.



More disease due  
to proliferation of  
mosquitos, flies,  
and midges

Wet sheep more  
susceptible to  
scald, footrot,  
fleece rot and  
chronic dermatitis.





# Hay crop losses due to extreme rain

Excessive and increasingly unpredictable rainfall can negatively impact hay crop yields and quality.

One study showed 22-44% loss in dry matter when cut alfalfa was exposed to >1 inch of rain during the curing process. Rainfall also leached out significant levels of carbohydrates, proteins, and minerals, decreasing the crop's nutritional and energy content.<sup>1</sup>



Excessively wet conditions and flooded fields can drown roots and leaves, depriving plants of carbon dioxide. This can lead to weakened immunity and plant death. Standing water also encourages the spread of harmful plant pathogens.

**Lower quantity and quality hay crop due to excessive rainfall results in higher costs to farmers who rely on this source of forage for their sheep.**

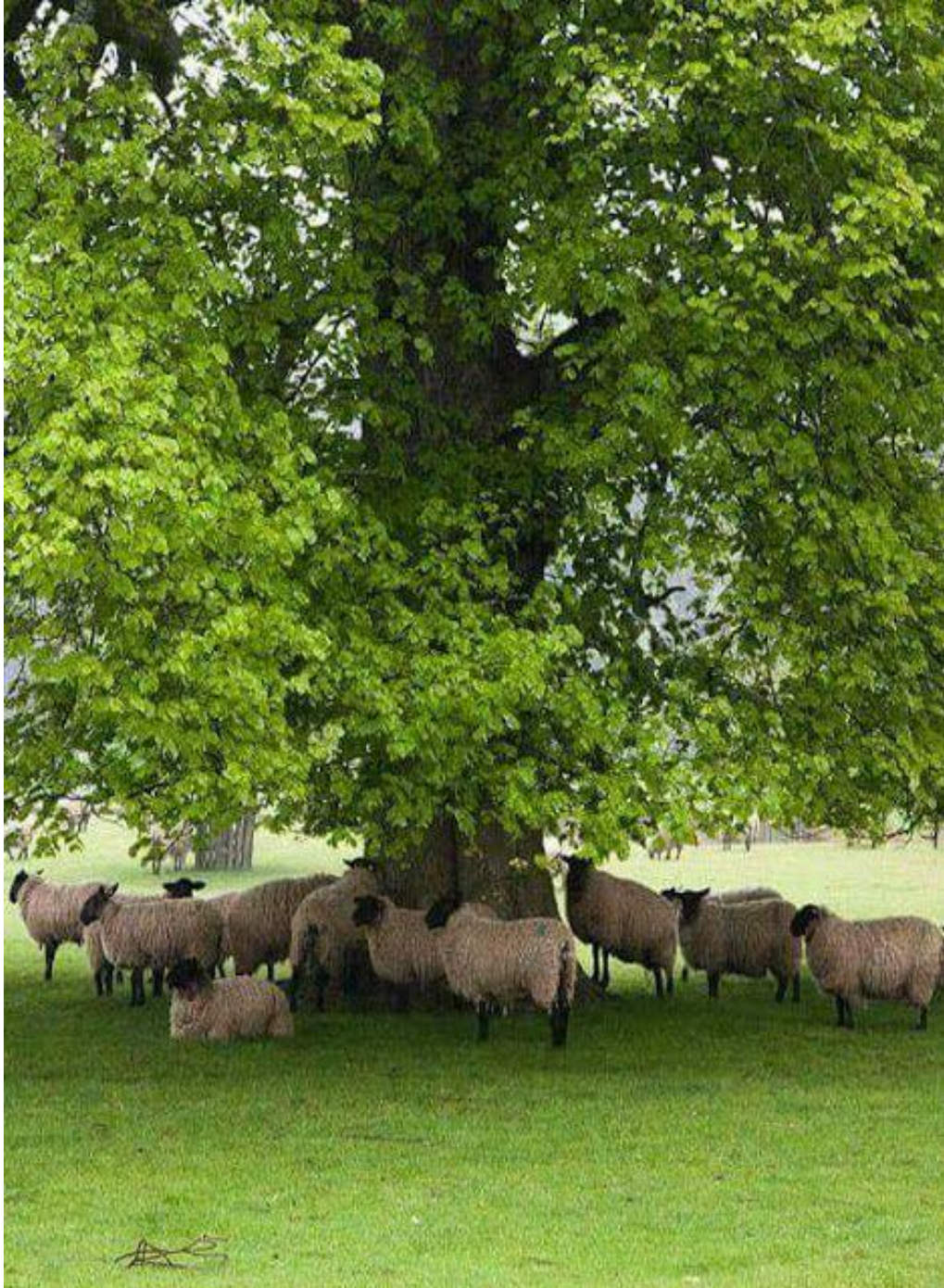
<sup>1</sup> Numbers taken from a report by University of Wisconsin-Madison's Team Forage Division of Agricultural Extension. <https://fyi.extension.wisc.edu/forage/rain-damage-to-forage-during-hay-and-silage-making/>





# Benefit #1

## Sun and Wind Protection



Sheep and Humans alike know the virtues of a good shade tree

**More trees, cooler temps.** Silvopasture can be up to 4.3 degrees cooler than open pasture at just 4 tons of woody material per acre (a mature forest has about 87 tons of woody material per acre)

**More grass.** Grass also appreciates a break from the heat! A study on silvopasture found that moderate shade increased forage yields by 16%.

**Extra water.** Less exposure to sun and wind also means less water evaporation, a.k.a. extra water for hard times.





## Benefit #2 Biodiversity and Pasture Health

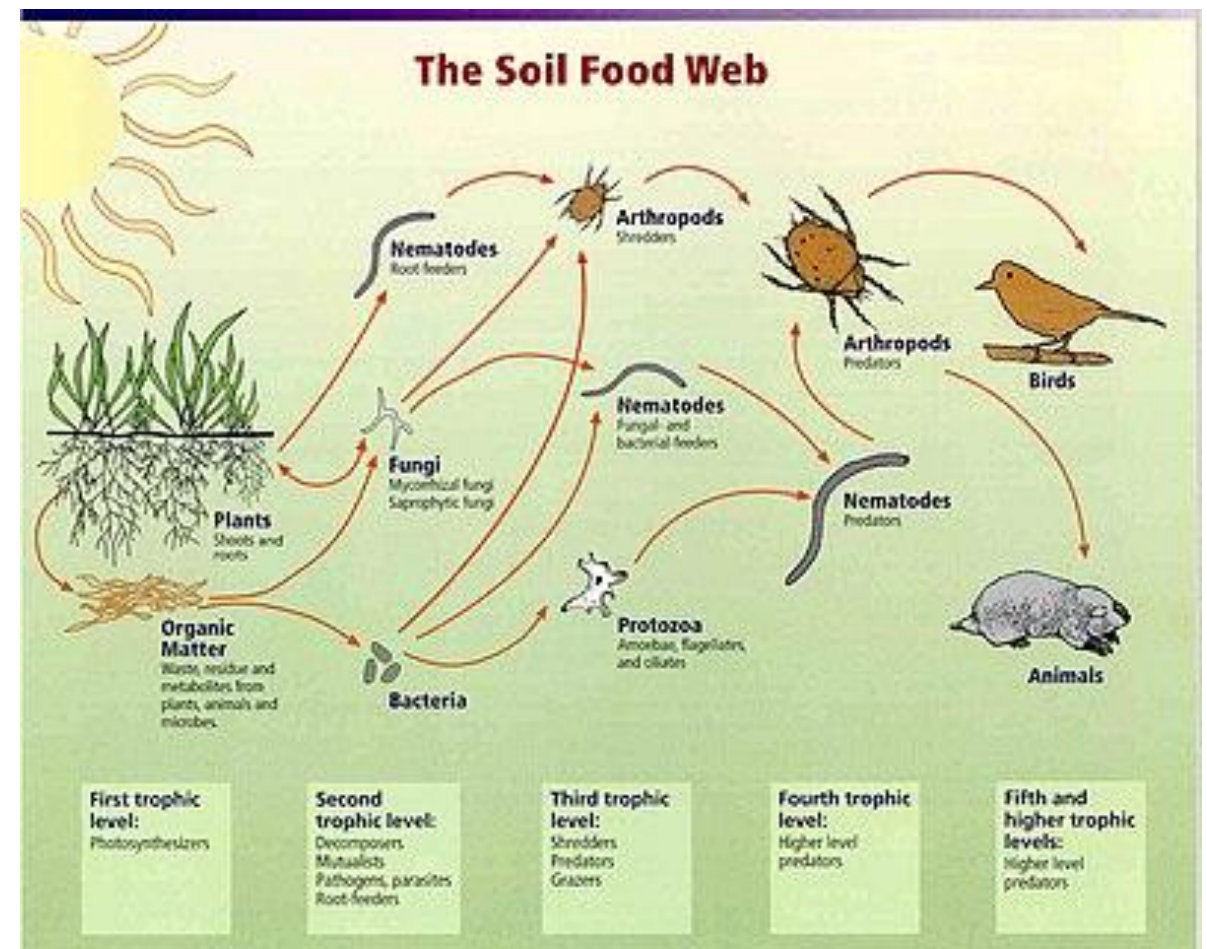
**Resilience.** As a rule, the more diverse an ecosystem is, the more **resilient** it will be in the face of environmental stressors— drought, pests, disease, etc.

### Beauty and biodiversity.

Silvopasture ecosystems are a refuge for an abundance of life, from bacteria to birds.



We often hear Great Horned Owls at Big Foot Food Forest!



**Better soils.** Trees add **structure** to the soil, preventing erosion. The roots retain **moisture** in the soil and exchange **nutrition** with the soil microbiome.

**Fun Fact.** A single teaspoon of rich pasture soil can hold up to one billion bacteria, several yards of fungal filaments, several thousand protozoa, and scores of nematodes





# Benefit #3

## High Quality Sheep Fodder

Replace hay with tree fodder in dry Summers and cold Winters!



Christmas tree buffet in the dead of winter at at Big Foot Food Forest

**Black Locust:** hardy, resilient, and produces high-protein fodder, nutritionally comparable to alfalfa.

**Willow:** fast growing, highly adaptable and produces tannins that have been shown to reduce some parasite loads in sheep.

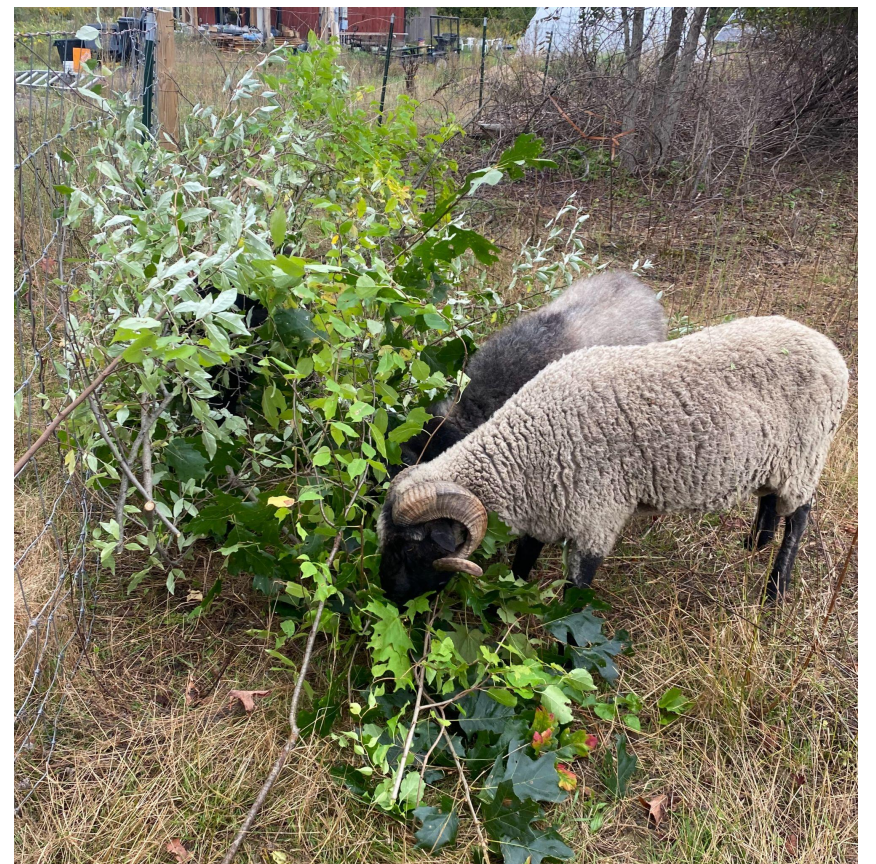
**Mulberry:** fast growing, highly productive, and very palatable for all grazing animals, including pigs and poultry.

**Poplars:** valuable fodder and shade species that can be quickly established in a silvopasture.

“Six Key Principles for a Successful Silvopasture”, Steve Gabriel



August tree fodder at our farm during the drought of 2022 when the pastures dried up.







## Benefit #4 Additional commercial crops

Use trees to layer another enterprise, and thus another income stream, onto your sheep operation.

**Fruits** - Apples, pears, paw-paws, cherries, peaches, persimmons, oh my!

**Nuts** - chestnuts, walnuts, pecans, hardy almonds, hazelnuts, yum!

**Timber, firewood, and mulch**

**Maple Syrup**

**Craft Material** - for example from young willow branches.



Chestnuts



Willow Basket-Weaving, Anyone?





# Get started - turn your open pasture into silvopasture! #1

## Jump-start with valuable, fast-growing trees.

Many trees grow to a size where they begin to provide benefits within five years.

Black locust, poplar, and willow make great fodder for sheep.

Chestnut and walnut make delicious nuts for humans.

Apple and pear trees!

Mulberries grow very fast and produce nutrient dense berries loved by both sheep and their humans.

Three year old Chestnut



MSU extension chestnut pruning webpage

Two-year old willows



Austin Unruh, Trees for Graziers used with permission

Apple tree planted in 2022



Shared by Eliot van Peski, Meadowsweet Farm, Maine, used with permission





# Get started - turn your open pasture into silvopasture! #2

## Protect young trees from sheep!

Sheep love to nibble juicy young trees and shrubs to death. Here are some helpful solutions.

Don't graze the sheep near trees when there is no grass to eat!

Homemade spikey tree cages invented by Eliot van Peski Sweetmeadow Farm in Maine.

Grow tubes with electrified or barbed wire around them.

One of our sheep, Sroni, in April looking sheepish after devouring this bark. Note: NO grass!



Big Foot Food Forest photo stock

Spikey cage around young chestnut at Meadowsweet Farm



Big Foot Food Forest photo stock

Grow tube with barbed wire



Austin Unruh, Trees for Graziers used with permission





Get started - #3  
Order some trees for your  
sheep here! \$6-8

Pick up Nov 14 at our farm or Chicopee

Trees are bareroot, 12-36", ready to plant

Honey locust	Red Mulberry	<b>\$8 for 1-4</b>
Poplar	Black willow*	<b>\$6 for 5+ (per cultivar)</b>
Persimmon	Pussy willow*	

\*great for wet fields!

Pay with cash, check, or  
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