



Extension
UNIVERSITY OF WISCONSIN-MADISON

Silvopasture

Diane Mayerfeld

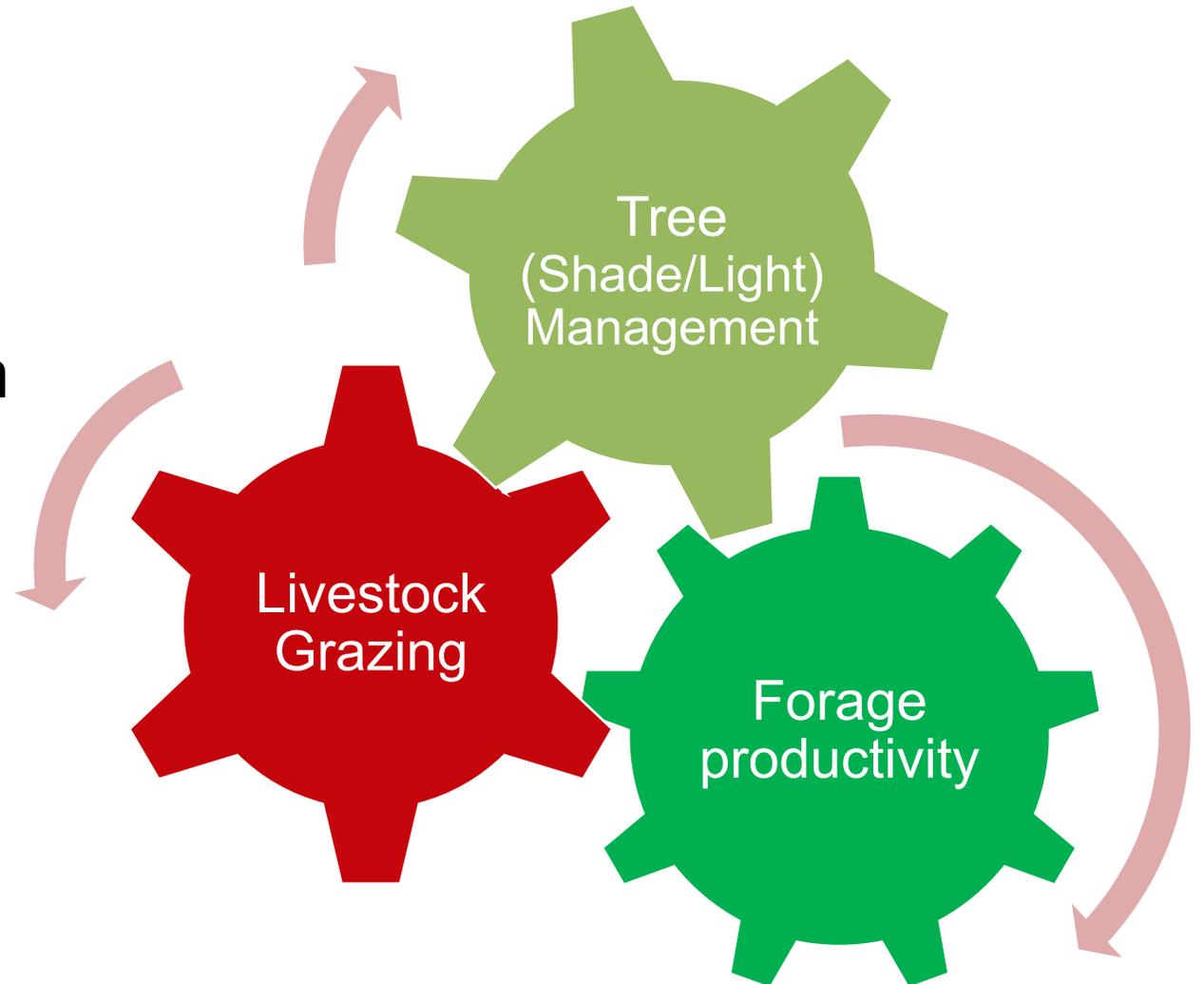
UW-Madison Division of Extension
Center for Integrated Agricultural Systems



What is silvopasture?

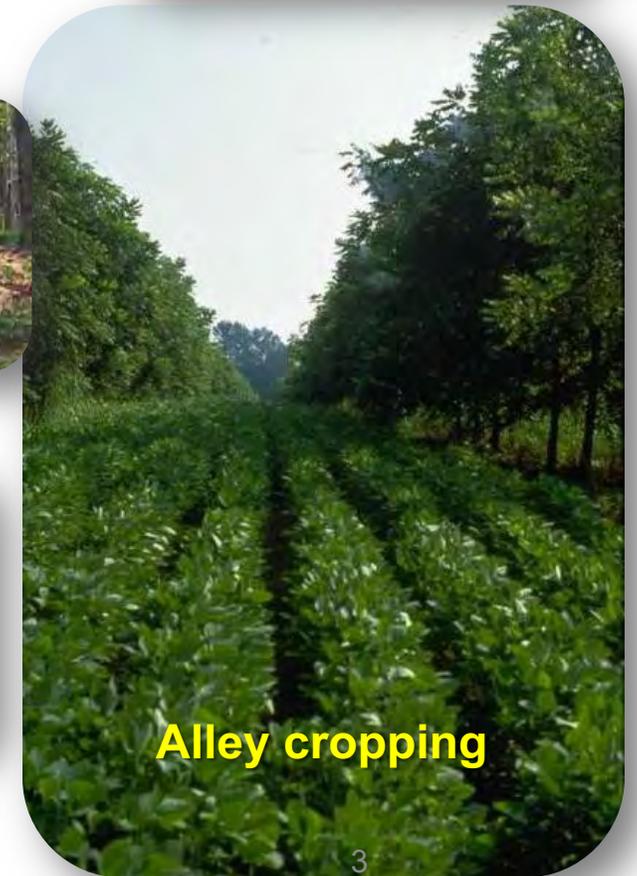
A system that integrates **trees**, **livestock**, and **forage** production on the same site

From *silva* (Latin for forest) + pasture



One of 5 Agroforestry Practices

...the *intentional* combining of agriculture and working trees to create sustainable farming systems.



Can be established by:

- Planting trees in open pasture, or
- Thinning existing woods and planting forages



Why are farmers interested?

In Wisconsin:

- Animal welfare
- Taxes
- Income from woodland
- Recreation / access
- Savanna restoration

Worldwide:

- Traditional practice
- Income diversification
- Fire risk
- Climate change

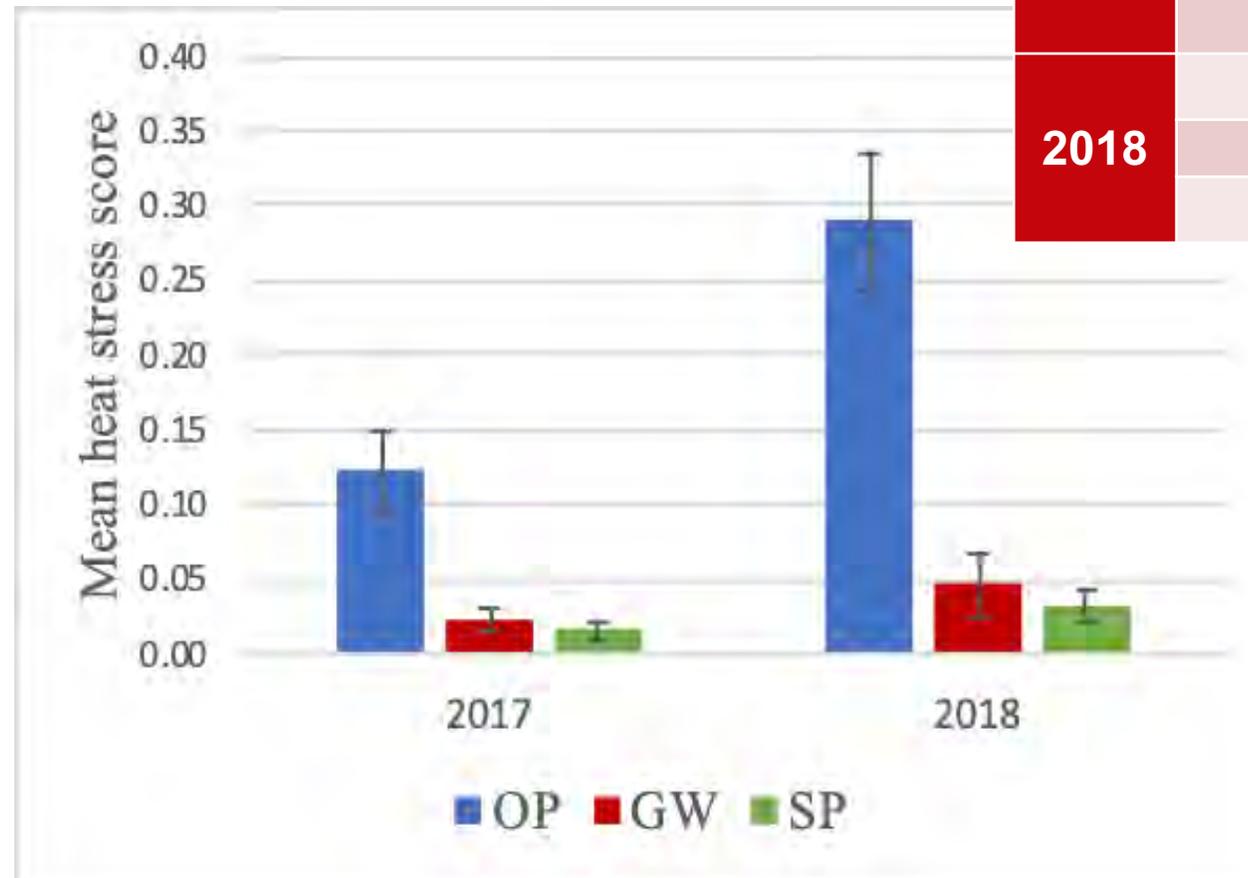


Photo: Ruth McNair

Shade and animal welfare

Heat stress

| Year | Treatment | % zero |
|------|-----------|--------|
| 2017 | OP | 67 |
| | SP | 90 |
| | GW | 88 |
| 2018 | OP | 48 |
| | SP | 89 |
| | GW | 90 |



Economics of welfare?



Tax considerations

Wisconsin Farm Woodland Property Tax Categories:

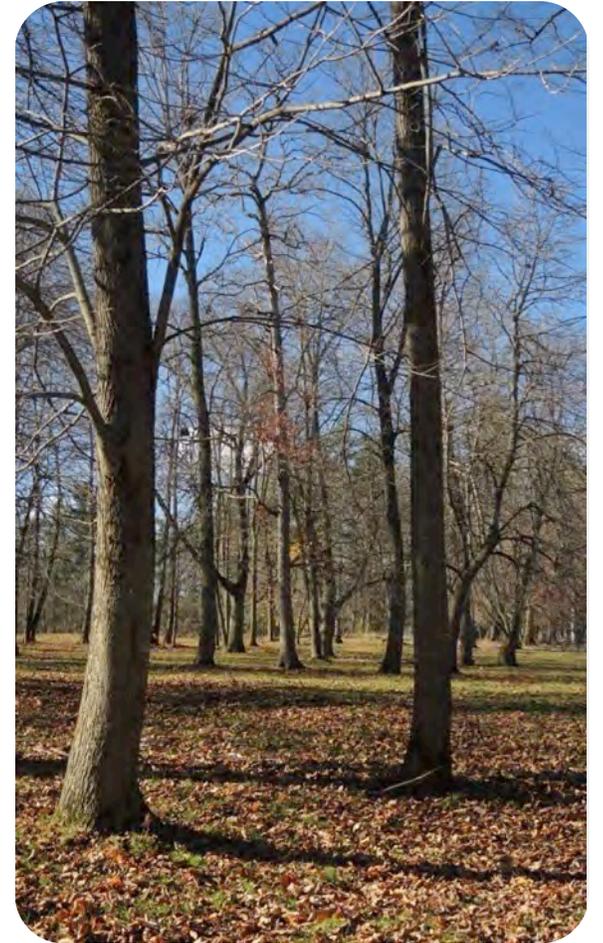
- Productive or recreational forest
- Agricultural forest
- MFL
- **Wooded pasture**



Silvopasture and WI Tax Law

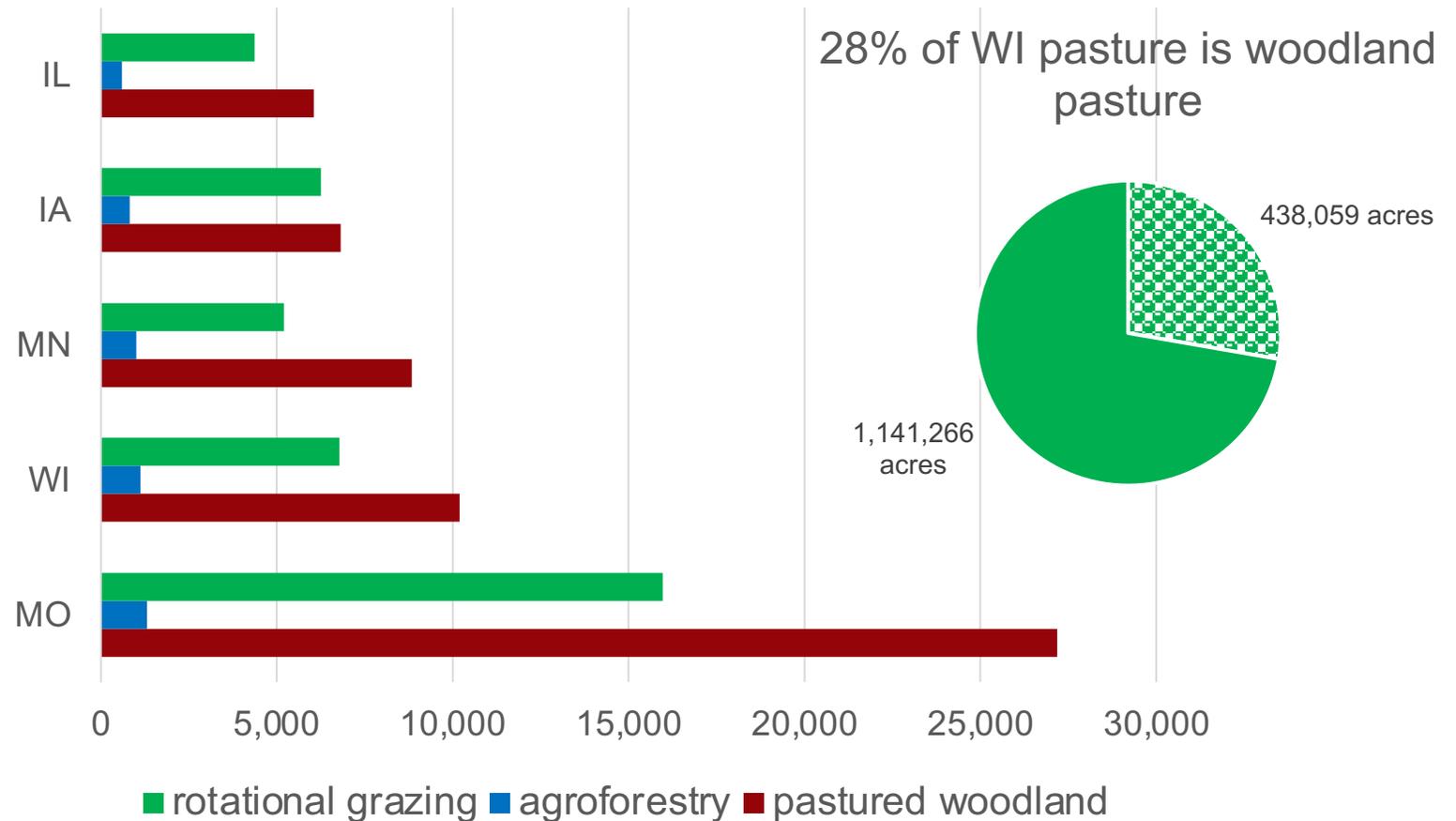
Wooded and wetland pasture

- **Active grazing keeps the undergrowth in check.** This condition is apparent when one compares wooded/wetland pasture to un-pastured woodland or wetland. Generally, un-pastured woodland not grazed on will have much thicker undergrowth, especially during the growing season.
- An assessor should consider if the predominant use of woodland or wetland is pasture. **The land should be pastured daily or on a reasonably periodic basis.** To be classified as pastured, a wooded area needs more evidence than a few paths or occasional use. **Land with non-existent or severely limited growth is not considered pasture.**



Income from woodland

Number of Farms with selected practices

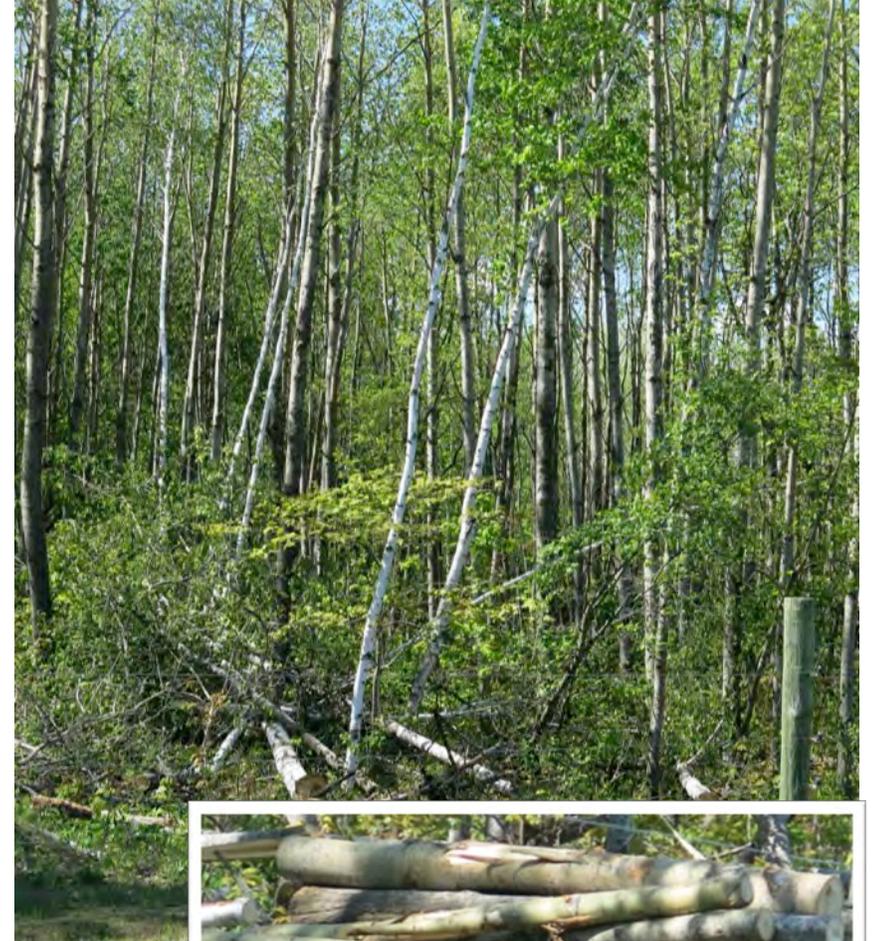


Income from woodland

- Income from trees

Costs or income from thinning?
It depends!

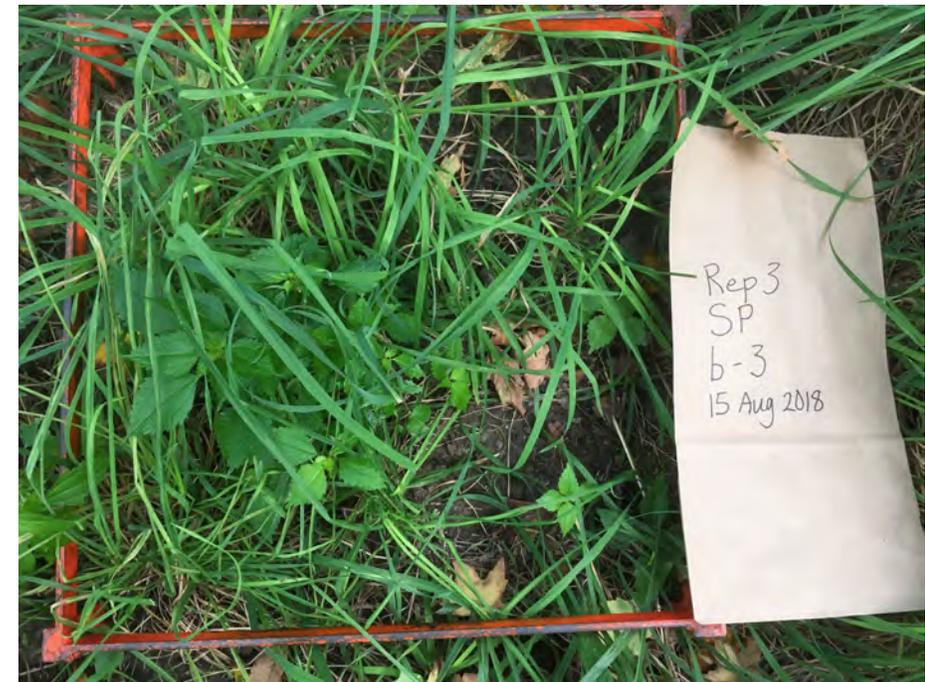
- Local market
- Stand size & access
- Quality of stand



Income from woodland

Forage / livestock

- Total forage growth lower than open pasture
- Labor higher (fences, machinery)
- Better & more forage than unmanaged woodland
- Emergency forage
- Welfare, recreation, other benefits



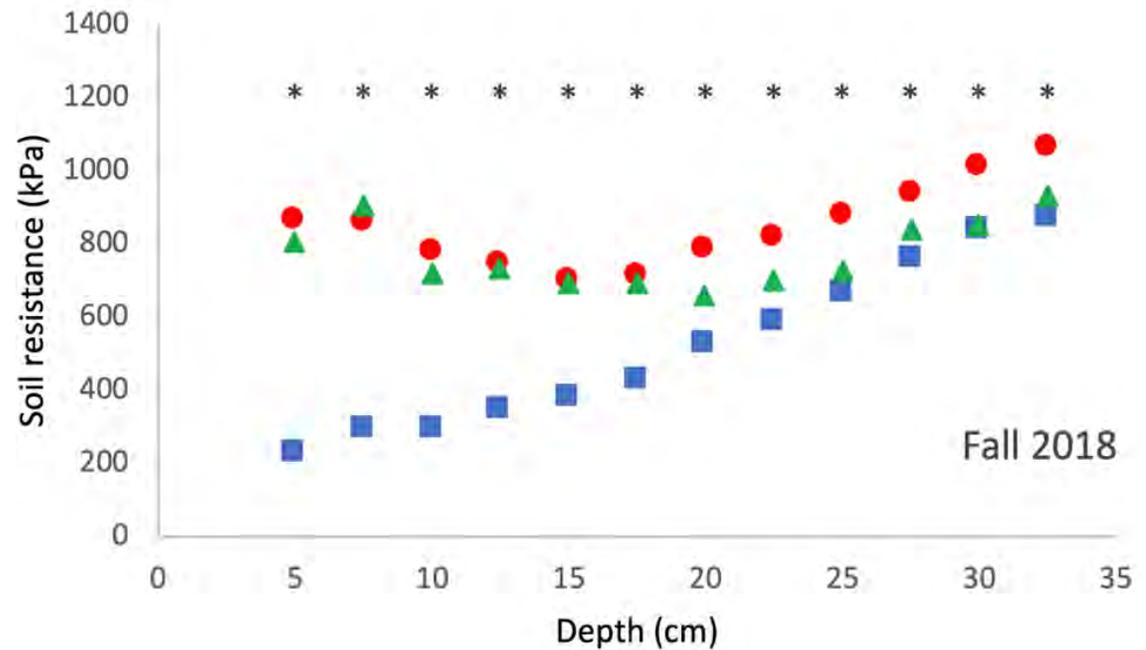
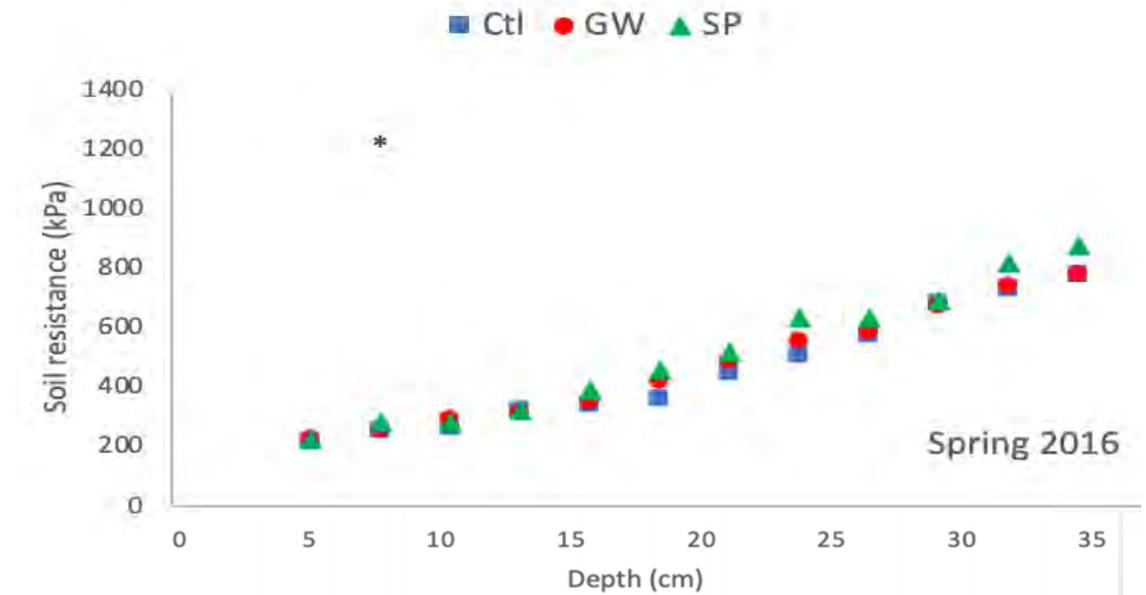
What could go wrong?

- Soil disturbance & compaction
- Damage to trees; lack of regeneration
- Increased labor / management (equipment access)
- Increased brush / toxic species / poor forage



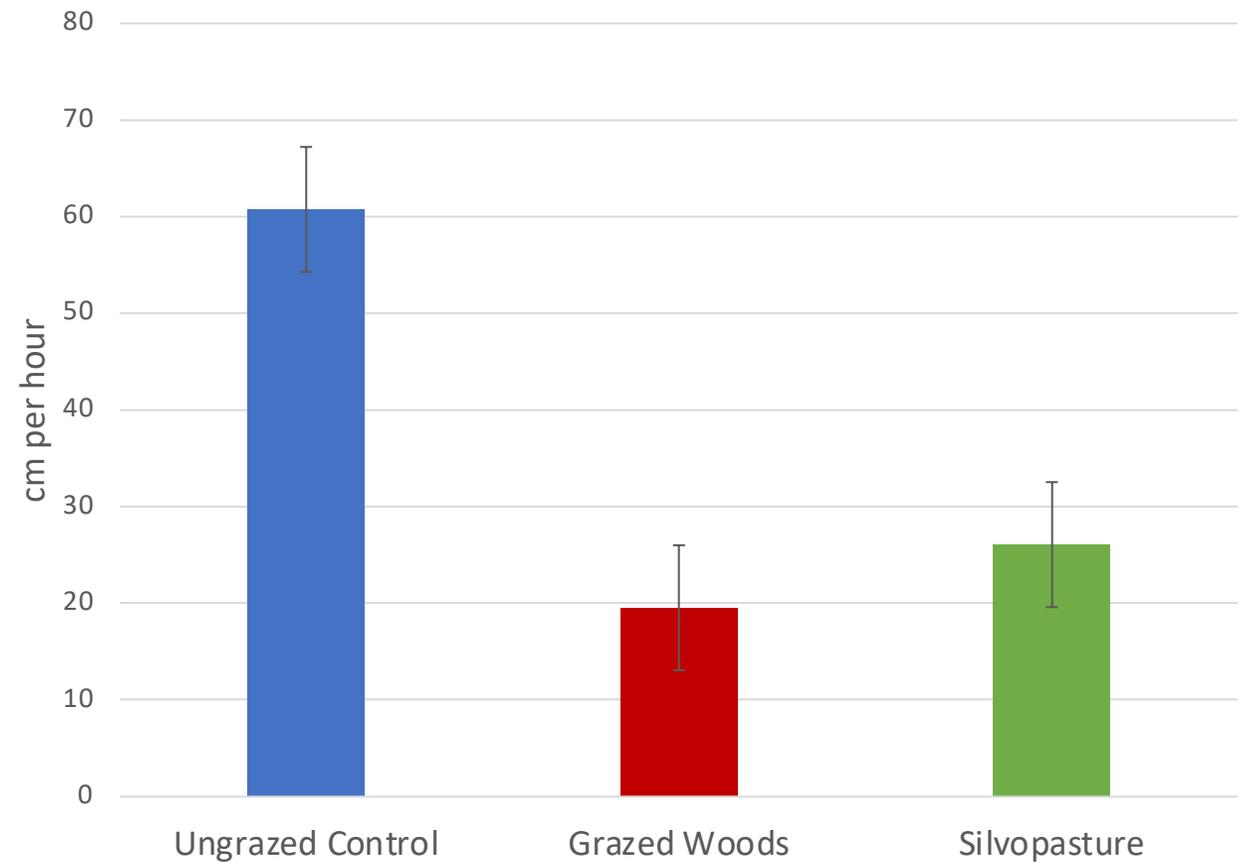
Photo: Mike Miles

Soil impacts – increased compaction



Soil impacts

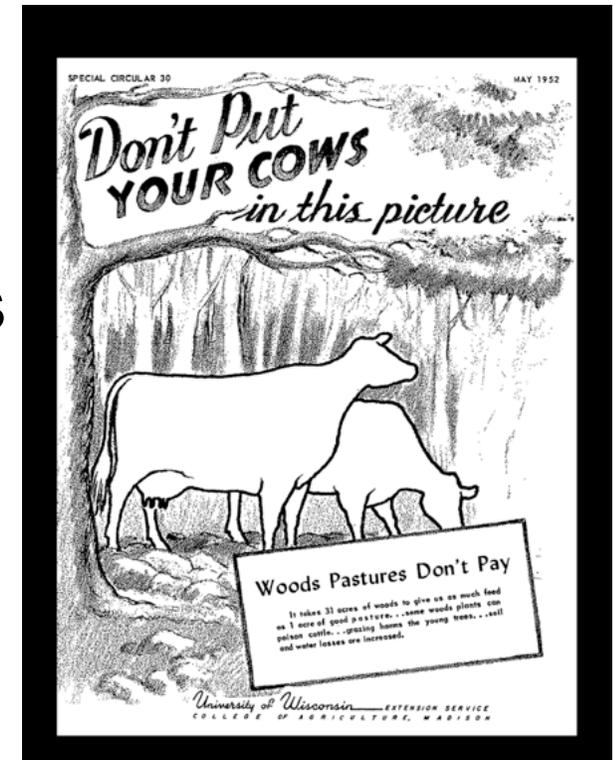
- Decreased infiltration



Silvopasture is not cows in the woods

It takes intentional, intensive, integrated management to:

- Prevent damage to trees
- Provide good forage under trees
- Prevent erosion & compaction
- Limit spread of invasive species
- Plan for regeneration



Planting SP establishment

Advantages:

- You pick the species
- You pick place (rows)
- Financial assistance

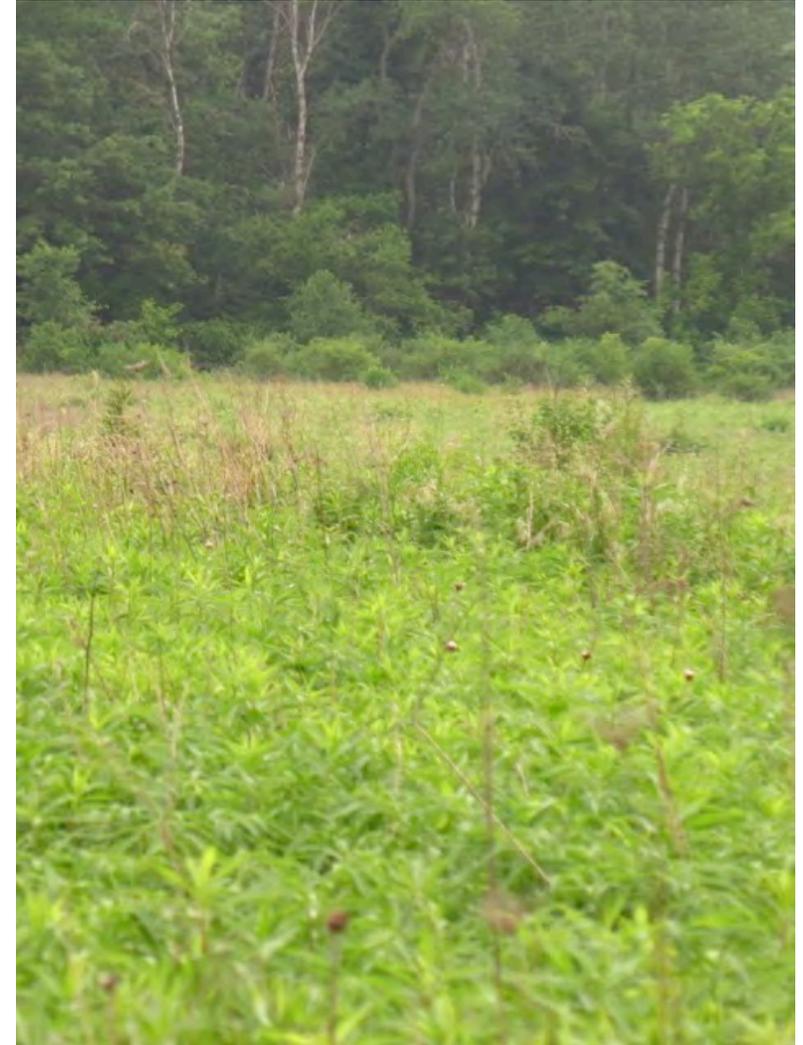
Disadvantages:

- Time
- Labor & cost
- Tree form



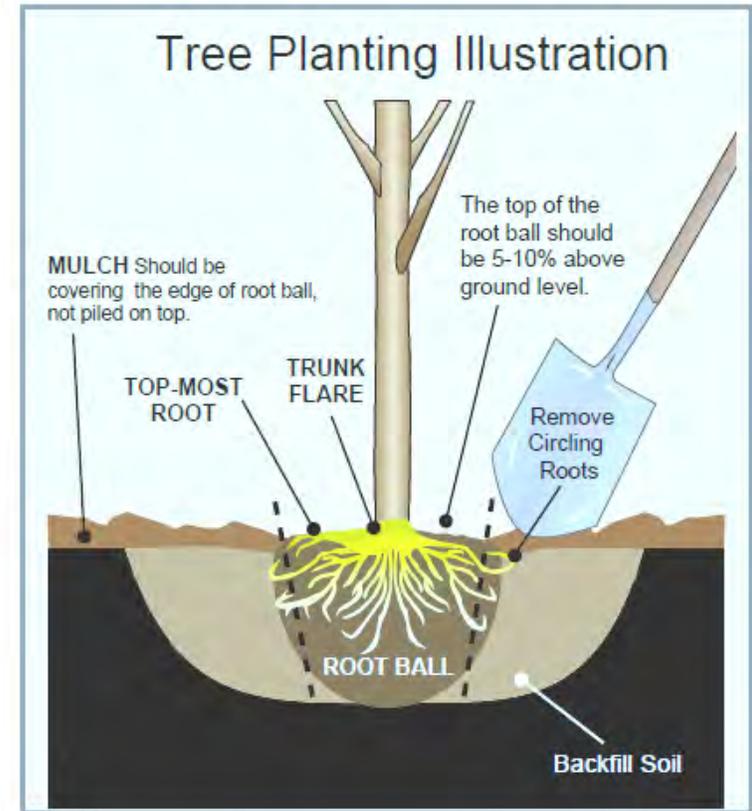
Planting establishment costs

- Trees
- Site preparation and planting
- Tree protection
- Weed control
- Irrigation



NRCS financial assistance

- Site preparation
- Tree & shrub establishment
- Weed control
- Mulching
- Tree pruning
- CSP enhancement
- Other practices



Planting trees

Costs: first 5 to 10+ years

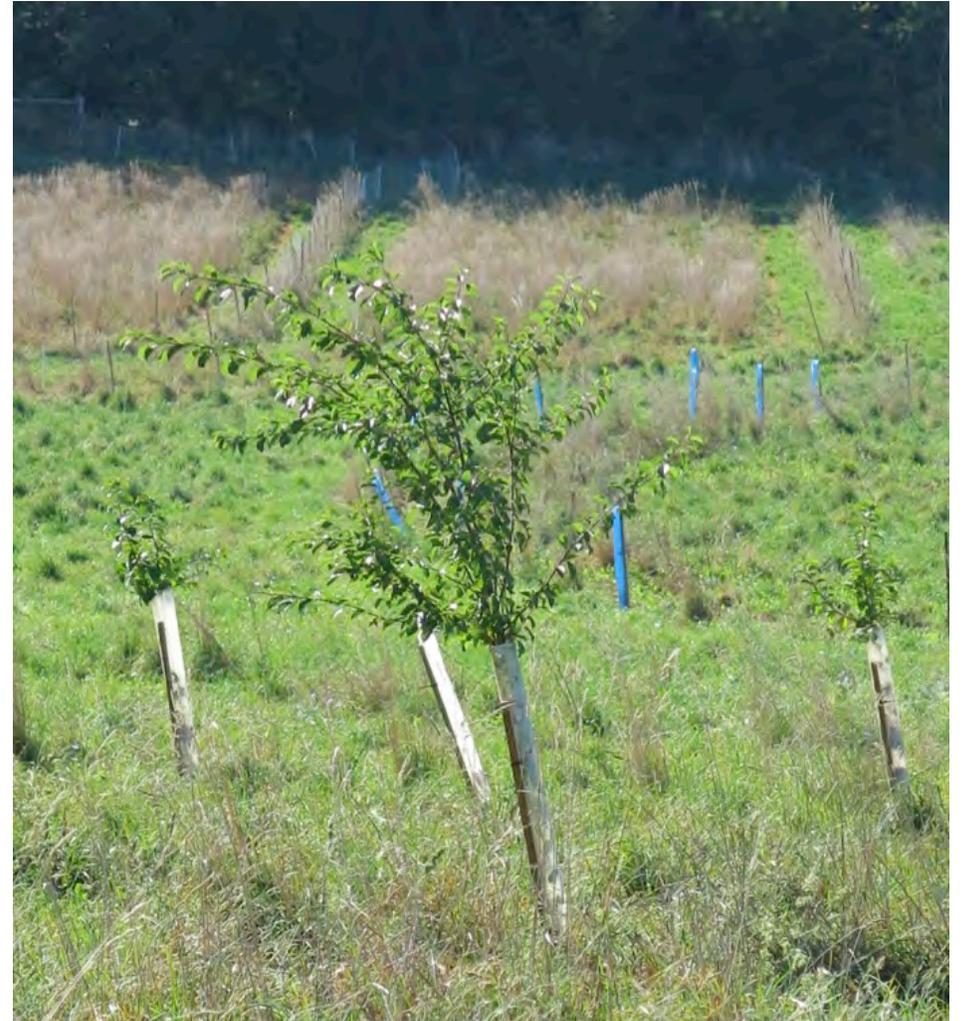
Returns: after 5 to 100+ years

- Timber?
- Firewood?
- Fruit or nuts?
- Fence posts or other products?
- Emergency fodder?



Planting silvopasture

- Select tree species
- Decide where and how to plant
- Prepare site
- Protect young trees
- Control weeds
- Irrigate if needed



Selecting tree types: what are your silvopasture goals?

- Shade? Shelter?
- Firewood?
- Fruit or nuts?
- Habitat?
- Timber?
- Emergency fodder?

Other considerations:

- Soils, aspect,
availability



Silvopasture is not 1 tree in a pasture



Planting implementation

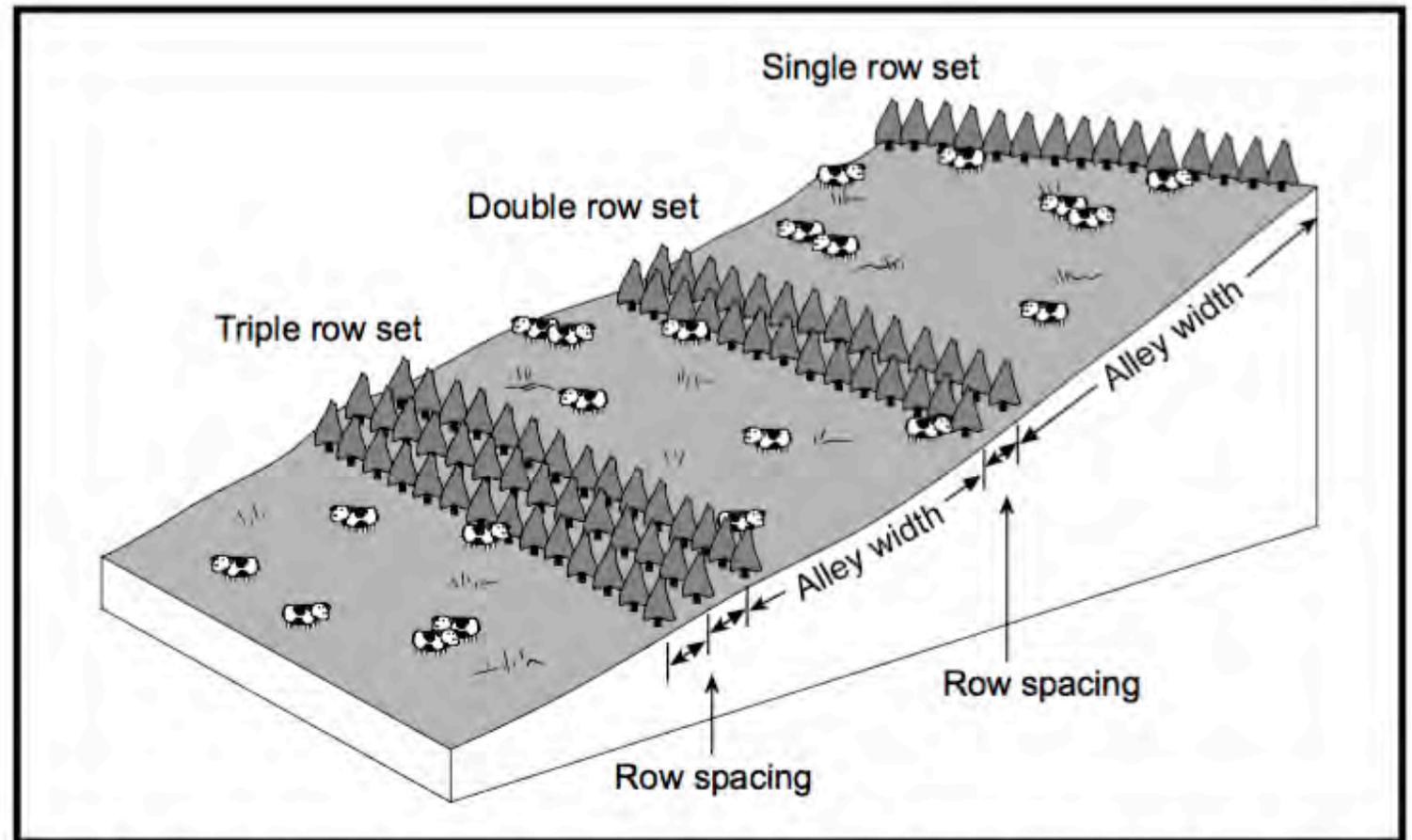
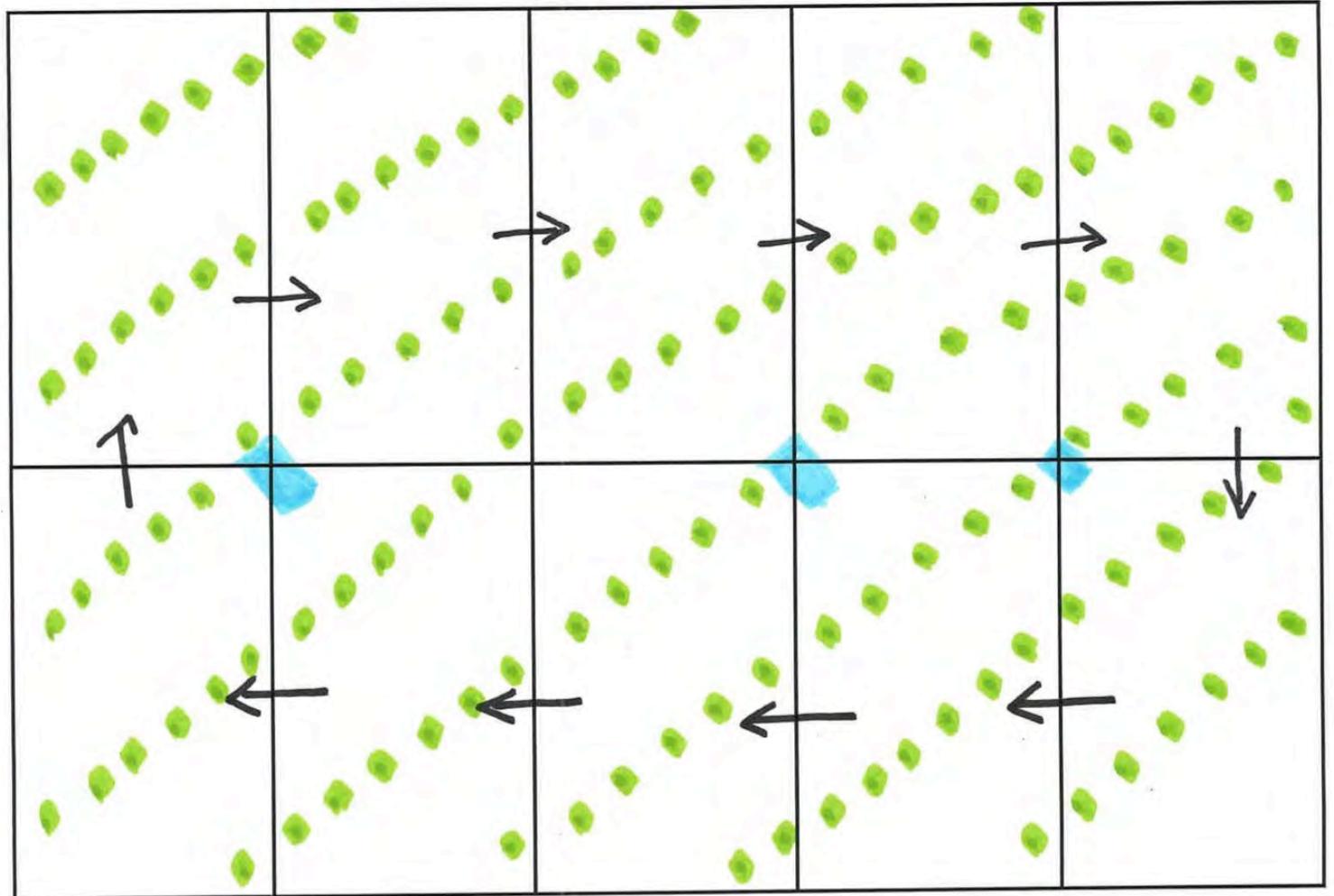


Figure 1: Typical layout diagram showing alley width, row spacing, and tree sets for establishing a silvopasture system in existing pasture.

Row orientation – wind or slope



Woods to silvopasture

- Consult a forester
- Decide which trees to keep (what are goals?)
- Aim for 30-50% shade
- Have a plan for slash
- Plant shade-tolerant forages soon after thinning

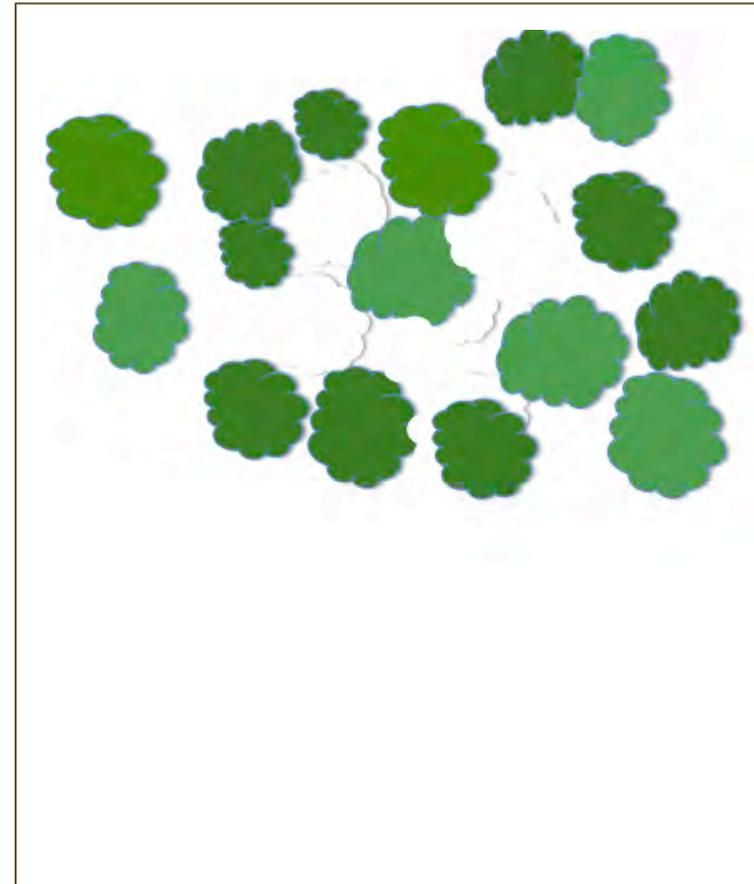
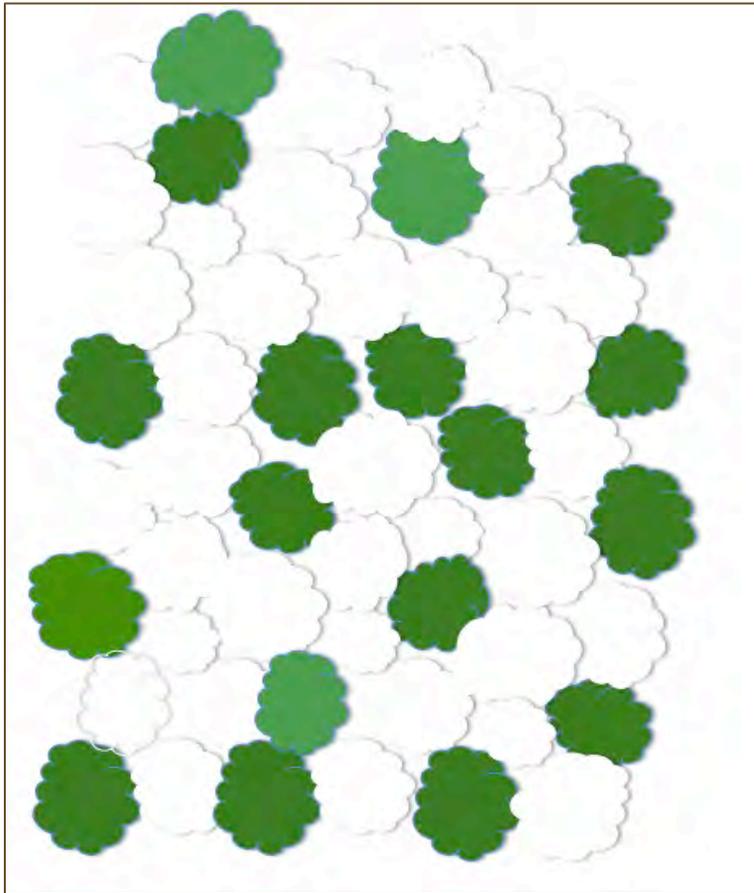


When is converting woods to silvopasture *not* appropriate?

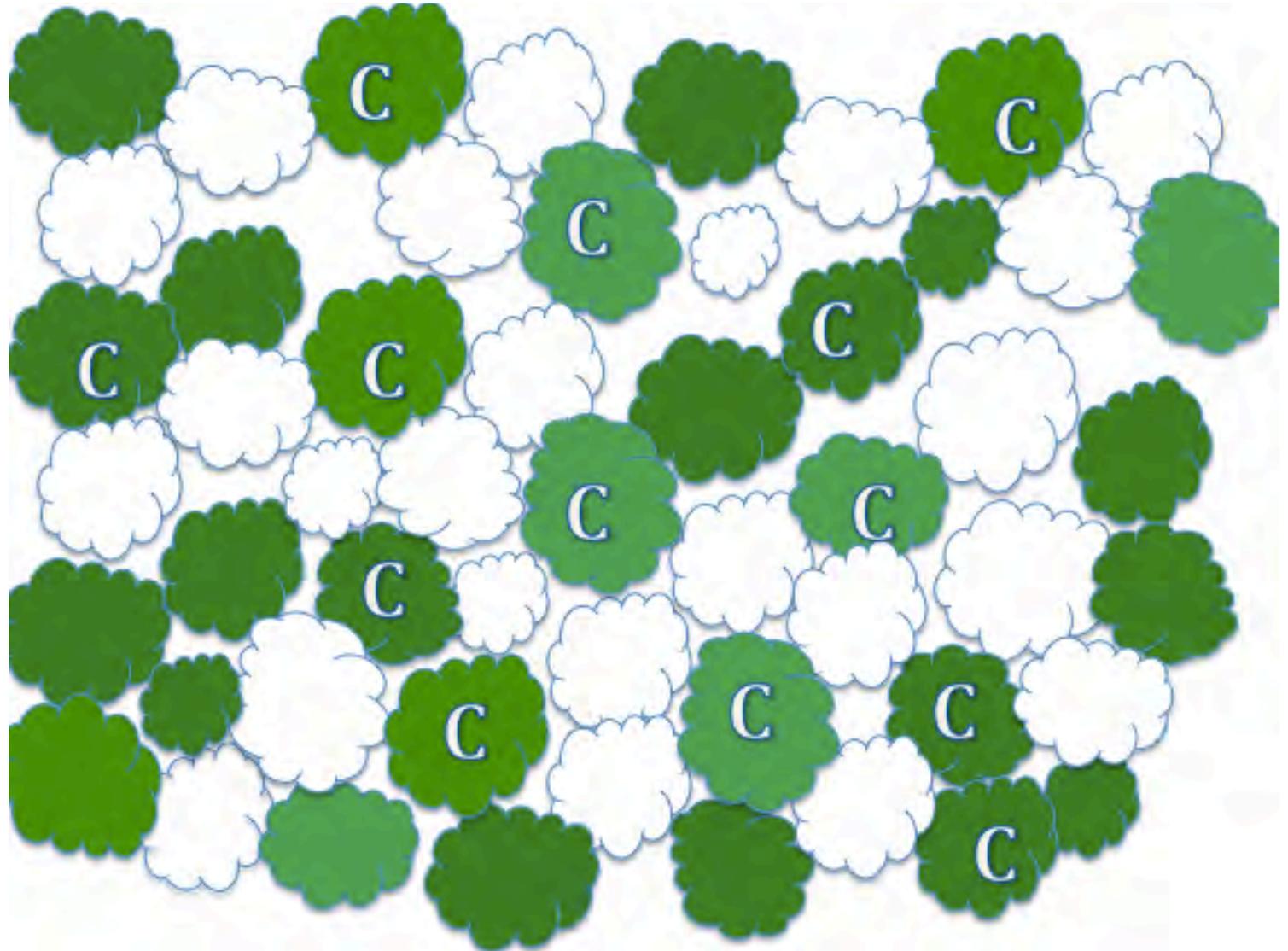
- If your woods cast a deep shade (and you don't want to thin) – if grass won't grow there
- If your woods have a legal restriction on grazing
- If your soils are too wet or your slopes are too steep
- If your woods have spring ephemerals or other sensitive flora or wildlife
- If you have young trees that you want to keep
- If you are not sure the grazing will be well-managed



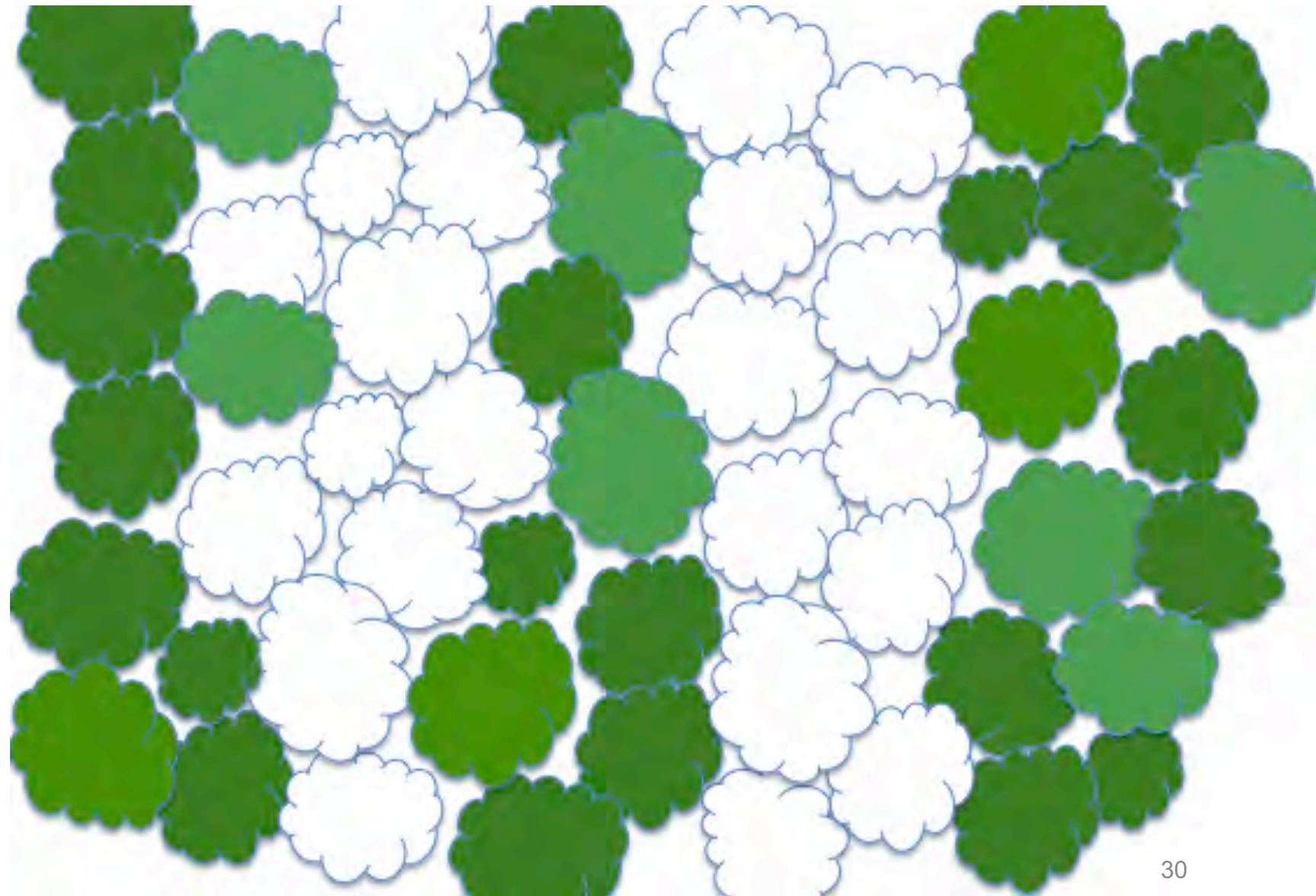
Silvopasture throughout vs Silvopasture with open pasture



Crop Tree Thinning



Patch tree thinning



Aim for 30 – 50% shade



Tips

- Have a plan for slash
- Plant shade-tolerant forages
- “Flash” graze
- Know your goals
- Prepare to be flexible
- Monitor the site



Not thinned



Thinned 1 year ago



More information

dbmayerfeld@wisc.edu (WI silvopasture list serve)

Hardwood Silvopasture Management:

www.centerforagroforestry.org/research/spmanagement.pdf

The Center for Agroforestry – University of Missouri:

www.centerforagroforestry.org

USDA National Agroforestry Center:

<https://www.fs.usda.gov/nac>



Forage dry matter kg/ha

