



Michigan Agroforestry Systems

Evaluating the Potential of a Site for Silvopasture Development

Directions: Answer the following ten questions on a scale of zero to ten points, using the descriptions below as a guide. Complete the ranking section at the end. Also, briefly answer each question in the space provided and make notes where additional evaluation will be needed.

1. _____ Established Zone for Bovine Tuberculosis (refer to Michigan Department of Agriculture and Rural Development Zoning order of 2018)

- 10 points: Site is not within an established zone for Bovine Tuberculosis (TB).
- 0 points: Site is within the TB zone, the practice of silvopasture is strongly discouraged.

2. _____ Site Quality (soil type, observable drainage, observable vegetation)

- 10 points: Site appears capable of growing productive agricultural crops and/or quality timber without drainage modification or soil amendments.
- 5 points: Site appears capable of growing some crops such as one-cut hay or medium-quality timber (based on height growth, diameter growth, vigor)
- 0 points: Site appears to be dominated by species indicative of very low soil fertility, very high or low pH, or limited rooting depth (drainage or bedrock).

Question: If the site scored low, does there appear to be a practical solution? If so, what would be the estimated cost per acre?

3. _____ Access (water, fencing)

- 10 points: Relatively easy to reach and maintain location with potable water, materials, equipment and livestock, and to inspect perimeter fencing.
- 5 points: Possible to reach location with water, materials, equipment and livestock in fair weather and without undue risk to humans or livestock, or damage to equipment.
- 0 points: Difficult to reach location except for very good ground conditions, specialized equipment, and/or considerable difficulties or risks to humans and livestock. Water availability is unreliable or of poor quality.

Questions: If the access scored low, what are the options, costs and advantages/disadvantages of each possibility to improving access such as a new road or installing a pond?

4. _____ Erosion Concerns

- 10 points: Site can tolerate managed grazing during heavy rainfalls with negligible long-term impacts. Gentle slopes with apparently erosion and pugging-resistant soils. Minimal signs of existing erosion. Few if any sensitive sites that cannot be adequately buffered or excluded such as vernal pools, wetlands or streams.
- 5 points: Site will only tolerate managed grazing under normal soil conditions to avoid negative long-term impacts. Special resource concerns exist which may be impacted by grazing or silvopasture management activities unless special precautions are taken such as exclusion fencing, increased buffers or restricted access during poor ground conditions or high runoff.
- 0 points: Site can only be utilized under very good to near “ideal” conditions to avoid detrimental impacts to the long-term productivity of the site and surrounding environment.

Questions: If erosion concerns scored low, can and should the site still be considered for use? If so, what “Best Management Practices” could be used to minimize or avoid negative impacts to the site?

5. _____ Hazards

- 10 points: No significant identifiable risks such as deep gullies, flood-prone streams, or predator-infested locations where practical controls are difficult to implement. High traffic roads may be considered a hazard depending on fencing and livestock.
- 5 points: Limited hazards present low or manageable risks
- 0 points: Numerous or significant hazards present major challenge to protecting livestock from loss or injury, expensive veterinary care, and liability issues.

Questions: If hazards scored low, could modifications be made to the silvopasture system to eliminate the identified hazards or reduce risks to an “acceptable” level? If so, what would the estimated cost be?

6. _____ Terrain (“fenceability”)

- 10 points: Site can be enclosed with secure fence with minimal clearing and excavation. Regular terrain allows for average post spacing – if posts are used – or a sufficient number of “living posts” are available. If posts are to be pounded, they can be driven to an adequate depth without excessive cost.
- 5 points: Site can be enclosed with secure fence but requires significant preparation. Fencing costs may be higher than average due to additional materials and/or installation costs.
- 0 points: Enclosing the site with a “tight” permanent fence would be difficult and expensive, although more provisional fencing options may exist to temporarily control animals under increased supervision.

Questions: If terrain scores low, what is the minimum standard of fence needed to safely and securely contain the specific breed of livestock in the given silvopasture area? What are the potential risks and costs if less secure fence is used? Could another species of livestock be used that requires less costly fencing (example, cattle vs. goats)?

7. _____ Size, Shape and Location

- 10 points: Proposed project area is adjacent to existing grazing operation, the carrying capacity of the area will justify the investment in developing it, and the shape of the parcel allows it to be efficiently fenced.
- 5 points: Parcel is not contiguous to existing grazing operation, but conveniently accessible. Irregular boundaries may increase fencing costs (no shared fences, high linear-footage of fence per acreage). The carrying capacity of the parcel, even once developed into a mature and productive silvopasture, is expected to be marginal compared to the initial investments and on-going benefits.
- 0 points: Proposed project area is isolated from other grazing operations and the carrying capacity is too low to be profitably developed and operated.

Questions: If size, shape and location scored low, can the design of the project be changed to improve the score?

8. _____ Alternative Locations

- 10 points: All “better” grazing areas on farm have already been developed, and developing this parcel is the next best option to continue expanding production.
- 5 points: There may be more feasible or convenient areas to develop, but there is reasonable justification to develop the area under consideration now versus waiting.
- 0 points: There is a significant opportunity cost to investing in the proposed area now versus other areas with higher potential.

Questions: If the location currently scores low, can the grazing system be developed or expanded in a planned and sequential manner that will eventually incorporate the proposed area? If so, are there preliminary treatments or investments that are presently justifiable, such as timber stand improvement thinning?

9. _____ Existing Timber Resources (overstory)

- 10 points: Site is adequately stocked (at least 60 ft²/acre) with “acceptable growing stock” (AGS*). Sites with greater than a basal area of 60 ft²/acre may not provide adequate sunlight to germinate and support forages.
- 7 points: Site is overstocked (> 90 ft²/acre) with merchantable trees
- 5 points: Site is marginally stocked (30 to 60 ft²/acre) with AGS
- 0 points: Site is overstocked (> 90 ft²/acre) with trees with little merchantable value
- 0 points: Site is understocked (< 30 ft²/acre)

*AGS refers to vigorous growing trees with the potential to grow into quality timber.



Questions: If the site is overstocked (>90ft²/acre) consider a thinning harvest or timber stand improvement (TSI) cut. Is there adequate sunlight reaching the ground for forage growth? What species are present? How old are the trees? What is the value of the (potential) timber stand?

If the site is not adequately stocked, is there advanced regeneration present that can be recruited to supplement the stand? Is planting justifiable? If so, with what species and to what cost/benefit? How will young trees be protected in the silvopasture not only from livestock but also from wildlife? Consider other agroforestry systems like alley cropping

10. _____ Existing Understory Vegetation

- 10 points: Abundant quantity of desirable and healthy vegetation found near ground level.
- 5 points: Patchy or modest quantities of desirable vegetation found near ground level, or desirable species are in poor health due to issues such as pests or excessive shade.
- 0 points: Scarce or no desirable vegetation found near ground level. Site may be dominated by undesirable or “interfering” species that will require a significant investment to control.

Question: If low quantities of desirable plants currently exist on the site, what are the limiting factors and what are the solutions and costs to remediating them?

_____ Score

< 50 Site is poor investment of time, money and resources

50 to 75 Site has potential, but carefully consider benefits to costs

>75 Site has good potential for silvopasture development; consider timber harvest to preserve value

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