Sheep performance, behavior, and thermal status in silvopasture systems
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Introduction:
Silvopastures integrate trees with forages for grazing livestock. Some studies report similar animal gains in silvopasture systems despite lower forage productivity compared to open pastures. Some studies indicate that the microclimate created by trees produces more nutritious forages, which offsets the reduction in available biomass (Kallenbach et al., 2006). However, previous work at Virginia Tech has demonstrated that there is a limited nutritive value benefit in silvopastures (Fannon-Osborne, 2012). We tested an alternative hypothesis: that animal performance in silvopastures is a consequence of physiological and behavioral modifications.

Objective: To integrate forage quantity and nutritive value characteristics with spatial and temporal grazing behavior and body temperature data to understand the effects of silvopasture systems on animal performance and well-being.

Forage availability, system gain, and fecal egg counts
- Walnut systems (●) had lower forage availability; gain per hectare was lower due to lower stocking rates.
- High fecal egg counts (○; eggs/cg of sample) in periods 2 and 3 suggest parasites depressed animal gains, particularly in the open pastures (●); 100% of the open pasture ewes were dewormed after the 2nd period, compared to 87% of the silvopasture ewes.
- Honeylocust systems (♀) supported the most consistent animal gains, along with greater forage availability and improved total digestible nutrients (●).

Conclusions:
Tree species had a variable effect on forage availability and nutritive value, sheep behavior, and thermal status. Animal gains in the silvopasture systems were equivalent to or better than the animal gains in the open pasture systems. Silvopastures appear to offer significant performance benefits through altered animal behavior and physiology.

References:

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