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## Woodland Pasture Practice for Small Ruminant Producers in Missouri

**Small ruminant farming, especially of sheep and goats, is a cornerstone of sustainable agriculture in Missouri's woodland pasture systems. These systems integrate grazing with agroforestry to manage understory forage, control weeds and invasive plants, and enhance farm profitability. Small ruminant farming in Missouri leverages woodland pastures to combine livestock production with agroforestry, promoting ecological and economic resilience. This factsheet draws from a survey of small ruminant farmers with woodland pastures to provide an overview of the characteristics of these farmers and their grazing practices. The survey was distributed to more than 100 producers, 70 responses were received, and 36 of them are complete and used.**

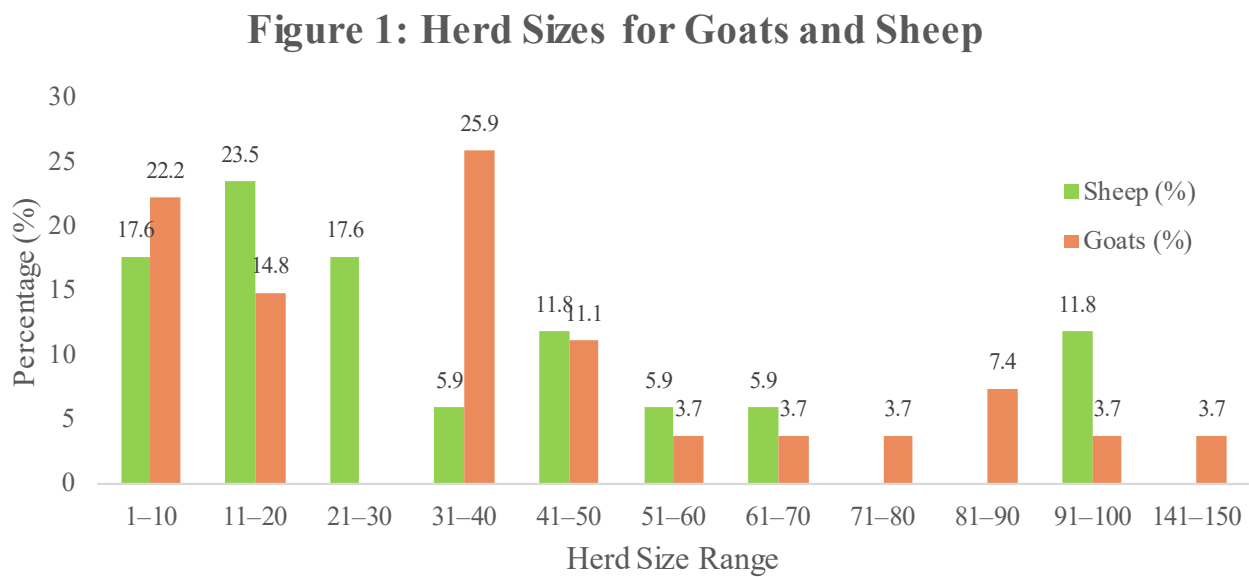
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*Arbuckle Jr, J. G., Valdivia, C., Raedeke, A., Green, J., & Rikoon, J. S. (2009). Non-operator landowner interest in agroforestry practices in two Missouri watersheds. Agroforestry Systems, 75(1), 73-82.*  
*Valdivia, C., Barbieri, C., & Gold, M. A. (2012). Between forestry and farming: Policy and environmental implications of the barriers to agroforestry adoption. Canadian Journal of Agricultural Economics/Revue canadienne d'agroeconomie, 60(2), 155-175.*

Farm and Farmer Demographics

Among the 36 respondents, 22 are female (64.7%), 17 are 55 to 64 years old (47%), 57% hold a bachelor’s degree or above, and the majority are non-Hispanic (97.1%) and white (91.4%). Almost all farms (about 34 out of the 36 respondents) are located in rural areas. The majority of respondents, 28 (61%), are in goat production, with 18 (39%) in sheep production.

Figure 1 shows the herd sizes of sheep and goats. Four (23.5%) sheep producers have between 11 and 20 sheep. Similarly, among goat farmers, those with herd sizes between 31 and 40 animals represent the largest group (n=7, 25.9%). The median sheep herd size is 25, and the median goat herd size is 35.



Stocking rates in woodland pasture systems vary among respondents. As shown in Table 1, about 42% of farmers report stocking fewer than 5 animals per acre, followed by 33% with 5–10 animals per acre. Smaller proportions report higher stocking densities: 11% had 10–30 animals per acre, 6% had 30–50, and 8% had more than 100 animals per acre.

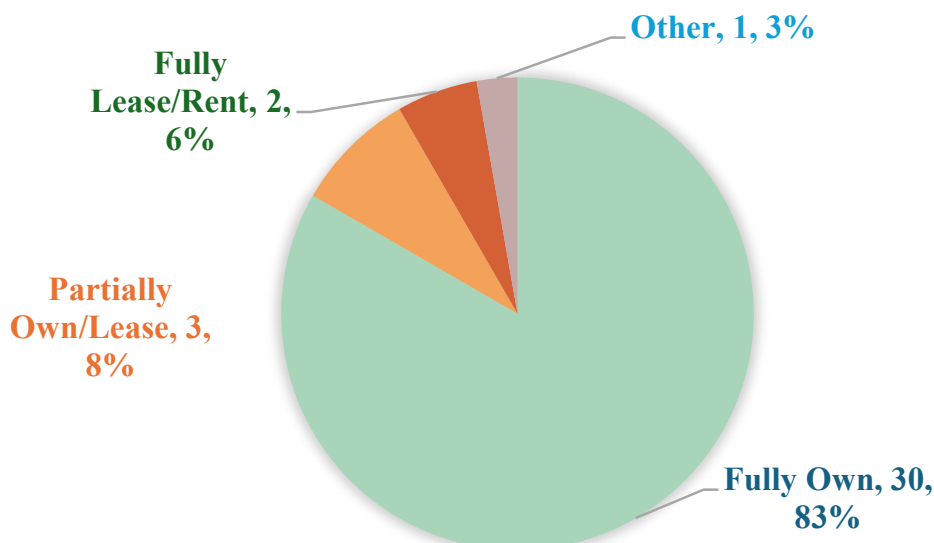
Table 1: Stocking rates in woodland pasture systems

| Stocking Rate (animals/acre) | Number of Respondents (n) | Percentage (%) |
|------------------------------|---------------------------|----------------|
| <5                           | 15                        | 41.7%          |
| 5-10                         | 12                        | 33.3%          |
| 10-30                        | 4                         | 11.1%          |
| 30-50                        | 2                         | 5.6%           |
| >100                         | 3                         | 8.3%           |

## Land Ownership and Use

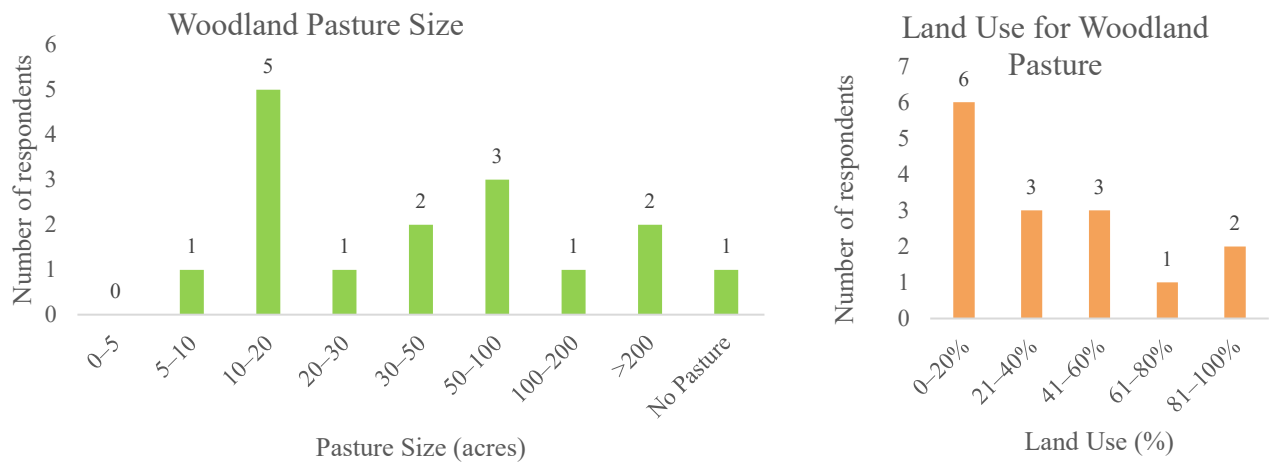
Land ownership is critical for small ruminant farming and agroforestry adoption in Missouri's woodland pasture systems as it can influence grazing capacity and sustainability . As shown in Figure 2, most farmers (83.3%, n=30) fully own their woodland pastures, ensuring stable access for long-term agroforestry investments. Smaller proportions partially own or lease (8.3%, n=3), fully lease or rent (5.6%, n=2), or have informal arrangements (2.8%, n=1, e.g., using family land like "it's my dad's, get to use it").

**Figure 2: Ownership of Woodland Pasture**



Pasture sizes also vary. (see Figure 3 ). The chart highlights the prevalence of 10–20 acres (n=5, 31.3%) and 50–100 acres (n=3, 18.8%) used for pasture in this group. These are followed by farmers with 30–50 acres and 100–200 acres (n=2 each), while 5–10 acres, 20–30 acres, and >200 acres each represent 6.3% (n=1 each). One farmer reported no pasture. Farmers allocate varying proportions of their land to woodland pasture or silvopasture. Six of them use 20% or less, while 20.0% (n=3) use 21–40% or 41–60% of their land. Higher allocations are less common, with 13.3% (n=2) using 81–100% and 6.7% (n=1) using 61–80%. Limited high-end use suggests opportunities to expand silvopasture for enhanced sustainability.

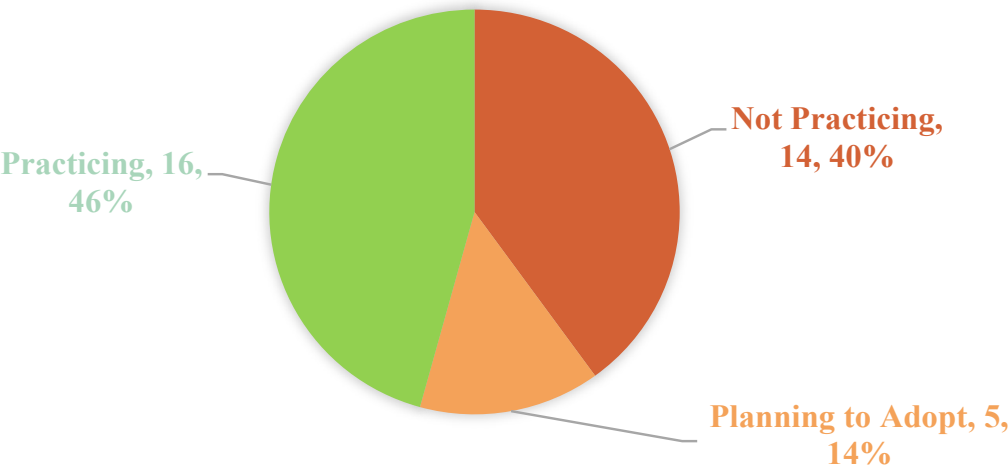
Figure 3: Woodland Pasture Size and Land Use Among Farmers



Grazing Management Practices

Regarding agroforestry adoption, nearly half of farmers (45.7%, n=16, see Figure 4) practice agroforestry, primarily woodland pasture/silvopasture (93.8%, n=15), with minimal use of windbreaks/shelterbelts, riparian buffers, forest farming (6.3% each, n=1), or other practices (6.3%, n=1, e.g., shade-tolerant seed) as indicated in Figure 5. Five out of 14 non-adopters (40.0%) plan future adoption, signaling growth potential for sustainable practices.

Figure 4: Adoption Status of Agroforestry



**Figure 5: Types of Agroforestry Practices Used  
(Among Adopters)**

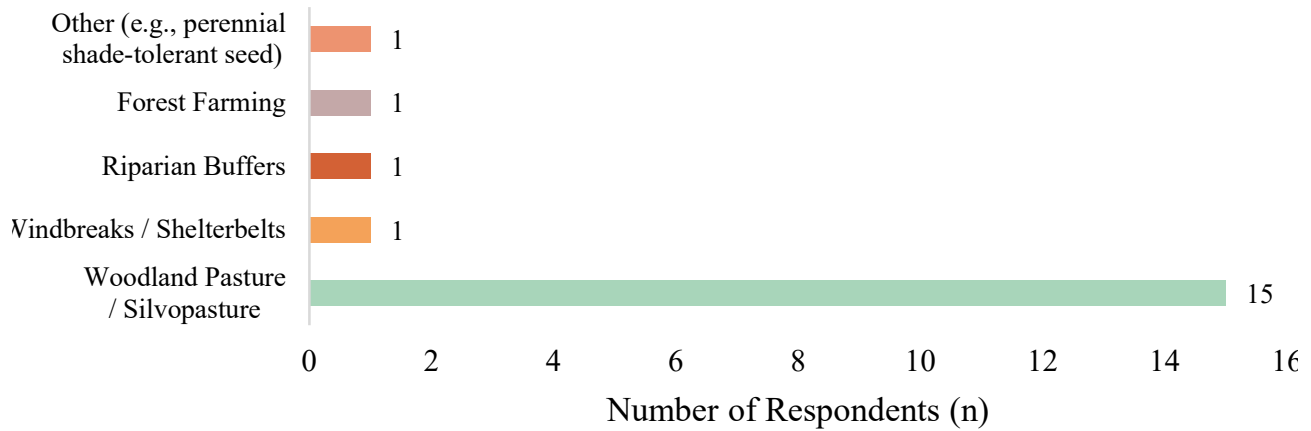
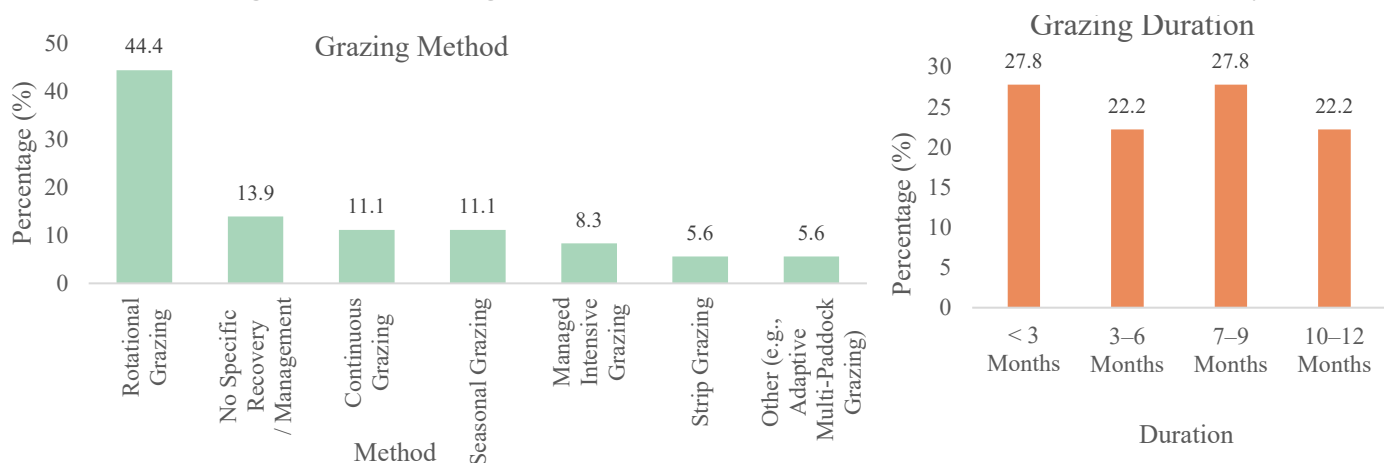


Figure 6 presents the grazing duration and methods used by these woodland pasture farmers in Missouri. The most common approach is rotational grazing, practiced by 44.4% of respondents ( $n = 16$ ), which supports pasture health and helps control invasive species. Other methods include no specific recovery management (13.9%,  $n = 5$ ), continuous grazing and seasonal grazing (each 11.1%,  $n = 4$ ), managed intensive grazing (8.3%,  $n = 3$ ), strip grazing (5.6%,  $n = 2$ ), and other techniques such as adaptive multi-paddock grazing (5.6%,  $n = 2$ ). Grazing duration varies considerably: 27.8% graze for less than 3 months ( $n = 10$ ) or between 7 and 9 months ( $n = 10$ ), while 22.2% graze for 3–6 months ( $n = 8$ ) or 10–12 months ( $n = 8$ ). This variation might

**Figure 6: Grazing Methods and Duration in Woodland Pasture Systems**



Pasture availability (see Table 2) varies among woodland pasture farmers. The majority (55.6%, n = 20) report moderate differences in pasture availability or quality between summer and spring.

This is followed by 25.0% (n = 9) who report significant differences, 16.7% (n = 6) noting slight differences, and 2.8% (n = 1) experiencing extreme differences, highlighting the need for adaptive management strategies during different seasons.

Table 2: Perceived Differences in Pasture Availability

| Perceived Difference    | Count | Percentage (%) |
|-------------------------|-------|----------------|
| Slight Differences      | 6     | 16.7           |
| Moderate Differences    | 20    | 55.6           |
| Significant Differences | 9     | 25             |
| Extreme Differences     | 1     | 2.8            |

Summary of the Results

Small ruminant production in Missouri’s woodland pasture systems is a diverse but primarily supplemental agricultural activity. The farmers surveyed are predominantly based in rural areas, with many being experienced producers who integrate sheep or goats into broader land management strategies. Land ownership is common, which provides a foundation for long-term sustainability. However, the proportion of land actively allocated to silvopasture remains limited, indicating untapped potential for expansion among respondents. While silvopasture and rotational grazing are commonly adopted, grazing durations and management approaches vary in response to seasonal pasture conditions. Stocking rates are generally low to moderate, reflecting both ecological considerations and the scale of operations. Agroforestry adoption is growing, with many farmers already engaged and others planning future implementation. Despite these efforts, seasonal variations in pasture availability and limited use of high-density silvopasture highlight opportunities to strengthen resilience and sustainability in woodland-

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