Alfalfa Nutrient Preservation, Utilization & Cycling in Sustainable Southeastern Livestock Systems

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This is an Agricultural Research and Extension project to occur over three years with combined efforts from three universities in the Eastern region (University of Georgia, Auburn University, and University of Florida). Alfalfa use in the southeastern US can provide a high-quality input for livestock production, while providing secondary ecosystem benefits to the longevity of forage-based systems through sustainable agricultural intensification (USDA Science Blueprint, 2021). While alfalfa integration into warm-season grasses have been successful in the South, additional research is needed to refine management applications and translate ancillary system benefits to producers to enhance adoption, use and sustainability in southern forage-livestock operations. Thus, further data is needed to provide recommendations to stakeholders which teach them how to best use alfalfa-based systems under differing defoliation management strategies, and how these practices influence ecosystem contributions. This work aims to better understand applied forage preservation and ecosystem management strategies utilizing alfalfa-bermudagrass mixtures to improve system sustainability for forage-livestock producers. Using an integrated cut-and-graze system where early-season forage harvests are made for conserved forage production, followed by mid-to-late season grazing can provide a dual-purpose system that intensifies land use by farmers, while optimizing nutrient cycling contributions from the plant and animal perspectives. Integration of alfalfa into bermudagrass systems improves forage production season length and quality, but ancillary benefits of this system have not been well-defined and are often undervalued by farmers. Ultimately, understanding systems dynamics of these integrated practices may help expand alfalfa use in the Southeast region. The data obtained from this project will (1) improve product preservation as a high-quality feed for livestock, (2) quantify, define, and illustrate nutrient use and cycling benefits to the animal and pasture, (3) develop economic tools for producers considering alfalfa use under these applications, and (4) significantly impact alfalfa production not only in the South but nationwide.