

Forages and Pastures: Centennial Presentations

544 ASAS Centennial Presentation: Historical perspective on the advances in forage research. J. Burns*^{1,2}, ¹USDA-ARS, Raleigh, NC, ²North Carolina State University, Raleigh.

The objective of this presentation is to provide a historic overview from 1908 through the present on advances in forage and pasture evaluation as related to ruminant utilization. The nutrition of ruminants resides with the utilization of forages, either in the form of pasture, or if stored and preserved as hay or silage. The diet may be all forage or some ratio of forage to concentrate, but the former is the focus of this presentation. The assessment of nutrients contained in forages, including pasturage, were initially identified and described in the early (pre 1900) literature by proximate analyses (following the Weende System) procedures. Innovation has occurred since then regarding the methods of nutrient identification, including improved characterization and rapid assessment of nutrient concentration in forages. During this same period a number of plant attributes have been identified and recognized as having a potential role in ruminant nutrition. These attributes consist of differences among forage species, differences among cultivar within species, morphological characteristics, herbage mass characteristics (grazing management) and physiological processes, such as regrowth rates diurnal shifts and advancing stages of maturity. Techniques and management strategies including stocking methods, and flexible utilization strategies in grazing environments have emerged during this period and have benefitted ruminants through judicious use of these inherent plant attributes. The process of moving forage innovations into the ruminant domain has occurred through advancements in better understanding of antiquality constituents, importance of diet selection, forage fermentation, and particle breakdown and passage. These are all subsequently reflected in *in vivo* dry matter digestibility and dry matter intake and ultimately expressed in the daily performance of the ruminant.

Key Words: Methods, Utilization, Ruminants

545 ASAS Centennial Presentation: Research and extension needs in forage utilization in the future. F. M. Rouquette, Jr.*¹, L. A. Redmon², G. E. Aiken³, G. M. Hill⁴, L. E. Sollenberger⁵, and J. Andrae⁶, ¹Texas AgriLife Research, Texas A&M System, Overton, TX, ²Texas AgriLife Extension Service, Texas A&M System, College Station, TX, ³USDA-ARS Forage Animal Production Research Unit, Lexington, KY, ⁴University of Georgia, Tifton, ⁵University Florida, Gainesville, FL, USA, ⁶Clemson University, Clemson, SC, USA.

Research and extension activities in forage utilization imply multi-discipline efforts targeted at the plant-animal interface. Future need assessments require a multidimensional response surface to account for discipline emphases-direction, funding level erosion, discipline survival, and stakeholder-commodity group interests. Energy-related costs of fuel, fertilizer, feed grains, and seed production mandate that economic assessments become a regular component of addressing and reporting forage-animal responses. Production and utilization strategies for legumes and reduced-nitrogen requiring forages and forage systems will be required to meet stakeholder demands for economically-viable, sustainable livestock enterprises. Emerging issues include plant food nutrient management on pastures and grazed areas, environment-compatibility with urban encroachment and land-use restrictions, and alternative land use for pasture areas. Reduced allocation of state and federal funding has contributed to a reduction in number of full-time equivalent scientists engaged in forage utilization activities. Enhanced requirements for extramural funding to support agricultural research endeavors has reduced forage utilization emphases due to prioritizing and redirection of commodity and industry-based grant funds. Stakeholder interests and objectives will likely include smaller-sized properties, increased urban proximity, and objective-motive, economic-driven management. Research and extension scientists will encounter a shift in emphasis to accommodate changes in stakeholders and property ownership. States that experience forage utilization discipline disappearance may seek a regionalized effort for expertise and databases to accommodate technology transfer opportunities.

Key Words: Grazing, Animal Performance, Pasture Systems