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Exploring ecosystem services in southeastern US grasslands

The numerous benefits provided by grasslands are elaborated in a recent review in Applied Animal Science

Champaign, IL, December 19, 2022—Much research goes into discovering management strategies for the beef industry that increase environmentally sustainability. “Forage-Based Beef Management Tools and Their Impacts on Environmental Sustainability” was the topic of the January 2022 Bill E. Kunkle Interdisciplinary Beef Symposium, and articles that resulted from presentations at the symposium appear in the December issue of *Applied Animal Science*.

One of the invited reviews from the symposium takes a close look at grasslands in the southeastern United States and describes the many ecosystem services that are provided by this major ecosystem. The authors state that according to the Millennium Ecosystem Assessment, “ecosystem services” are defined as “the benefits people derive from ecosystems.” These services benefit agriculture and livestock, as well as humanity at large. “With increasing impacts of global warming, ecosystem services developed and implemented through novel management practices are critical for providing climate regulation, nutrient cycling, biodiversity, and habitat for wildlife and pollinators,” said David K. Beede, PhD, Editor in Chief of *Applied Animal Science.* The researchers also describe future opportunities and challenges regarding these services and outline some possible payment mechanisms for ecosystem services.

Ecosystem services can be classified into four categories: provisioning, regulating, cultural, and supportive services, and the review provides much detail about the many ecosystem services that southeastern grasslands provide in each of these categories. For each, the researchers also describe how farm systems and practices can be adjusted to optimize productivity by working with these ecosystem services and how healthy, managed ecosystems benefit producers and the community.

One example given describes the array of benefits that can be derived from the practice of planting grass–legume mixtures. “Cattle growth performance is improved on grass–legume mixtures when compared with grass monocultures because of the greater digestibility and crude protein often observed in legumes versus grasses,” said lead author José C. B. Dubeux Jr., PhD, North Florida Research and Education Center, University of Florida, Marianna, FL, USA. He added that at the same time, this practice

provides a variety of flowers to attract pollinators, reduces nitrate leaching when compared with N-fertilized systems, enhances nutrient cycling via plant litter, and improves resilience of forage systems, all of which add to the quality of the pasture and forage offered to livestock.

Caption: A healthy pasture ecosystem benefits livestock and pollinators (Credit: J. Dubeux Jr.).

Dubeux Jr. explained that in the future, “ecosystem productivity will be considered as the major way to assess overall grassland productivity, instead of the traditional focus on animal products.” The review outlines how ecosystem services and productivity could be measured using tools such as remote sensing, machine learning, and artificial intelligence and compensation for such services could be offered to land managers. Dubeux Jr. added, “Ecosystem services are key to support life on Earth, and they will be recognized and valued as indicators of sustainability more often in the near future.”

The article appears in the December issues of *Applied Animal Science*.

The other article that resulted from a presentation given at the Bill E. Kunkle Interdisciplinary Beef Symposium, “Forage-Based Beef Management Tools and Their Impacts on Environmental Sustainability,” Southern Section of the ASAS annual meeting, Ft. Worth, TX, January 2022, is as follows:

> “Invited Review: Genetic decision tools for increasing cow efficiency and sustainability in forage-based beef systems” by Troy N. Rowan. 2022. Appl. Anim. Sci. 38(6). https://doi.org/10.15232/aas.2022-02306.

Notes for editors

“Invited Review: Ecosystem services provided by grasslands in the Southeast United States,” by J. C. B. Dubeux Jr., D. Jaramillo, E. R. S. Santos, L. Garcia, and L. D. Queiroz

(https://doi.org/10.15232/aas.2022-02296), *Applied Animal Science*, volume 38, issue 6 (December 2022), published by FASS Inc. and Elsevier.

This article is available at https://doi.org/10.15232/aas.2022-02296.

Full text of the article is also available to credentialed journalists upon request; contact Brittany Morstatter at +1-217-356-3182 ext. 143 or ARPAS@assochq.org to obtain copies. To schedule an interview with the author(s), please contact José C. B. Dubeux Jr. at dubeux@ufl.edu.

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