Diverse Perennial Circular Forage Systems are Needed to Foster Resilience, Ecosystem Services, & Socioeconomic Benefits in Agricultural Landscapes

Valentin Picasso, University of Wisconsin
Marisol Berti, North Dakota State University
Kim Cassida, Michigan State University
Ann Finan, St. Cloud State University
David Hannaway, Oregon State University
William Lamp, University of Maryland
Andrew Stevens, University of Wisconsin
Carol Williams, University of Wisconsin

Prevailing agricultural systems dominated by annual crop monocultures, and the landscapes that contain them, lack resilience and multifunctionality. They are vulnerable to extreme weather events, contribute to degradation of soil, water, and air quality, reduce biodiversity, and negatively impact human health, social engagement, and equity. To achieve greater resilience and stability and multiple ecosystems services therein, and to improve socioeconomic outcomes, we propose a practical framework to gain multifunctionality at multiple scales. This framework includes forages within agroecosystems that have the essential structural features of diversity, perenniality, and circularity. This framework improves understanding of, and access to, tools and materials for promoting the adoption of diverse circular agroecosystems with perennial forages. Application of this framework will result in land use and land cover transformations that simultaneously solve multiple sustainability challenges in agriculture. However, we need to overcome policy, economic, and social barriers to enable all producers to gain knowledge of diverse, perennial, circular agroecosystems with forage, and to implement them. We propose a transdisciplinary process to increase knowledge of these systems, to increase equitable access to this knowledge, and to help reduce barriers to adoption of these systems so that greater agricultural multifunctionality may be realized at all scales.

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