



There's More to Diet Selection than Protein and Energy: The Role of Secondary Compounds in Animal Grazing Behavior

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During the past several decades, people worldwide have expressed a growing interest in reconstructing ecosystems to enhance ecological, economic, and social values. Yet, to do so, we must find ways to enhance biodiversity, environmental quality and the sustainability of grazing lands where plants and herbivores have interacted for eons. Over time our understanding has evolved from a focus on plant structure and nutrients to a growing appreciation for plant secondary compounds, which abound in every plant nature has to offer. Though often seen only in terms of their negative impacts on animal intake and production, we are becoming increasingly aware of their beneficial roles in plant, animal, and human health. We are also learning how these compounds interact with one another in grazing systems. We will discuss ongoing behavioral studies that show how cattle and sheep foraging behavior is dramatically influenced by eating different combinations and sequences of forages containing secondary compounds. Sheep offered food high in alkaloids eat more when supplemented with food containing either tannins or saponins and cattle spend more time grazing plants high in alkaloids when they first eat plants high in tannins and saponins. Providing herbivores with a diversity of plants thus allows them to regulate and mix foods so as to better utilize primary and secondary compounds, as well as enhancing economic and ecological performance.

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