Biodiversity and Cattle Well-being: Forage Diversity, Microbial Diversity, Herd Health, and Milk Composition

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Abstract:
Humans are in the midst of an epidemiologic transition, in which globalization and ecological disruption are associated with newly emerging infectious diseases as well as reemerging infections previously thought to be under control. As an important livestock species in frequent close contact with humans, cattle may be similarly affected by ecological changes; they also represent a potential source of zoonotic disease. Our proposed research examines the impact of switching from conventional confinement dairy production (low-diversity) to pasture-based management (higher diversity) on microbial diversity and composition, cattle rumen and udder health, and milk quality and composition. This cutting edge work represents the first step in a long-term collaborative research project that will allow the four principle investigators to embark on a new and little studied field: the relationship between biodiversity and cattle health, the role of competitors and predators in disease regulation, and the relationship between habitat structure and cattle well-being. The work, which includes an international workshop held at UVM, has the potential to alter farmer and rancher perceptions of wildlife and native habitat, reducing the ecological impact of livestock rearing in Vermont and globally.