Getting the Dirt on Diversity

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For thousands of years, the rise and fall of civilizations were built on the ability of soils to grow crops and sustain populations. Fertile soils created dynasties and changed structures of civilizations. Once hunter-gathers, people now remained stationary on the land. Over time, farming techniques and knowledge of soil physical and chemical structure improved and yet, soil collapse and desertification still remain prevalent. Only recently, the biological properties of soil and its significance have become understood. The healthiest soils are full of life, with millions of species and billions of microbes. These soil microbes are the foundation of an elegant symbiotic system that collectively cycle nutrients, build organic matter and create soil structure. In return, plants growing in these soils provide food to the microbes, excreting sugars manufactured during photosynthesis through their roots into the soil. Therefore, managing for active plant growth feeds the soil throughout the year. Currently there is no rating system on range land. My research tested the hypothesis that Similarity Index, the measure of current plant community compared to site potential, could be an effective indicator of extending the growing season through plant diversity, and an effective measurement for soil health characteristics; greater plant diversity; improved soil respiration, higher soil moisture, greater stability and beneficial soil temperatures. The results showed higher Similarity Index ratings consistently tracked greater soil biological activity. Therefore, the conclusion is that the hypothesis was correct; Similarity rating is an effective soil health indicator on New Mexico Range lands.

Awards Won: