

# Soil Management: Conservation and Improvement

## Background

*Soils are a major component of our ecosystem, yet so little is known about the soil.*

Leonardo DaVinci said “*We know more about the movement of celestial bodies than about the soil underfoot.*” We have learned a great deal about soils since that statement in the 1500’s but there is still so much we don’t understand because of its complex associations and microorganisms that have yet to be identified. Soil is a dynamic, living, breathing natural resource that requires careful *conservation and improvement* to function properly and provide the foundation for successful rural and urban objectives.



78 degrees on June 15



## Principles and Management

*Well managed native prairie should be our reference!*

Native prairies have provided the following *principles* and can help resource managers understand the natural system and build on that system to obtain their goals and objectives!

1. *Keep it covered*
2. *Manage disturbances*
3. *Increase Diversity*
4. *Keep a living root thru the year*
5. *Properly Integrate Livestock*

Some of most biologically active, porous, well structured, organically rich soils have developed under these principles. Each principle provides specific needs for the biological associations to function.

*Management Considerations and Benefits* of *Keeping it covered and managing disturbances* is demonstrated well in planned grazing systems that manage the timing, duration, and density of livestock grazing. These management techniques help to prevent *soil crusting and compaction* by hoof action. It also helps to reduce *soil surface temperatures* where soil biology does the majority of their nutrient cycling. *Increasing diversity and keeping a living year round* is managed by planning recovery periods during different seasons. Increasing diversity of plant species and keeping a living root helps to build *soil porosity and aggregation*. These components of *soil structure* help to increase moisture holding capacity and increase organic matter. *Proper integration of livestock* provide soil microbes (the underground herd) composted residues in the form of manure, green and brown residues that are trampled by livestock, saliva, hair, and urine which all lead to more *diverse soil macro and microorganisms* and needed *nutrients* to feed the ecosystem!

## Summary

*In short, remember that soils and plants are so interconnected that management decisions of one greatly affect the function of the other.*



**Texas Section Society for Range Management**

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*Providing Leadership for the Stewardship of Rangelands Based on Sound Ecological Principles*