

# Whole Cycle Tuesday

## Key Takeaway

Soil isn't just "dirt" it's a structured system. Managing soil structure, pore spaces, and gradation ensures long-term productivity, resilience, and sustainability. Practices like reducing compaction, adding organic matter, and maintaining ground cover help preserve this balance.

[www.agresourceinc.com](http://www.agresourceinc.com)

[info@agresourceinc.com](mailto:info@agresourceinc.com)



*"The environment is where we all meet; where we all have a mutual interest; it is the one thing all of us share."* — Lady Bird Johnson

## Soil Physical Structure: The Role of Pores and Gradation

### What is Soil Structure?

Soil structure refers to the way soil particles (sand, silt, and clay) are grouped together into aggregates. These aggregates form different shapes, granular, blocky, platy, or prismatic, which determine how air, water, and roots move through the soil. Good structure improves productivity, stability, and resilience against erosion.

### The Importance of Pore Spaces

Within and between soil aggregates are pore spaces, the small openings that allow water, air, and organisms to move. These pores are divided into:

- **Macropores:** Large pores that drain quickly, allowing oxygen exchange and root growth.
- **Micropores:** Small pores that hold water for plants but limit air movement.

A balance between macropores and micropores is key. Too many large pores, and the soil won't hold water. Too many small pores, and oxygen will be limited, stressing roots and microbes.

### Soil Gradation: Particle Size Distribution

Gradation describes how different soil particle sizes are distributed. Well-graded soils contain a mix of large and small particles, filling spaces efficiently. Poorly graded soils, dominated by one particle size, may either drain too quickly (sandy) or hold too much water (clayey). Gradation directly influences pore distribution and thus water infiltration, drainage, and compaction resistance.

### Why This Matters

- **For Agriculture:** Proper structure supports root penetration and water availability.
- **For Landscapes:** Balanced gradation prevents surface crusting, compaction and improves turf and plant health.
- **For Construction:** Soil stability and load-bearing capacity depend on structure and gradation.

