



Questions raised by a Farmer Rakesh Rajistan India: Why oxygen less in soil air ? Why CO₂ is high? And PQNK oxygen diffusion Rate Ko kese maintain karti h?

PQNK answers:

Why is Oxygen Less in Soil Air? Why is CO₂ High?

The soil is a living ecosystem. The multitude of beneficial microbes, fungi, earthworms, and plant roots constantly respire. They consume oxygen (O₂) and release carbon dioxide (CO₂) as a waste product. This natural biological activity is the primary reason the soil air has a lower concentration of O₂ and a higher concentration of CO₂ compared to the atmosphere above. The critical factor for plant and microbial health is not the absolute amount of O₂, but the rate at which it can be replenished from the atmosphere.

How PQNK Maintains the Oxygen Diffusion Rate

In the PQNK system, the oxygen diffusion rate—the efficient exchange of soil CO₂ for atmospheric O₂—is maintained through the system's inherent, self-reinforcing cycles. The system manages itself by creating and preserving the ideal physical structure for soil respiration.

1. In-Situ Generation of Soil Organic Matter and Structure:

The PQNK system does not import compost or manure. Instead, it generates organic matter internally. The key practices are:

- **Non-removal of Root Mass:** After harvest, the root systems of crops are left to decompose in place. As they decay, they release organic compounds and, most importantly, leave behind a network of stable bio-pores. These old root channels become direct pathways for air and water to infiltrate deep into the soil profile.
- **Surface Mulch from Crop Residue:** The above-ground crop residue is not removed or burned but is returned to the soil surface as a permanent mulch layer. This blanket protects the soil from sealing up due to rain impact and sun, which would form a hard crust (or cap) that blocks gas exchange.

2. Self-Sustaining Biology Creates Porosity:

The system fosters a thriving soil food web that continuously engineers a porous soil structure.

- **Microbial Action:** The mulch and decaying roots are the food source for a robust population of microbes. As these microbes digest the organic matter, they produce sticky substances that bind soil particles into small, water-stable aggregates. This creates the crumbly, sponge-like texture full of the tiny spaces essential for air and water movement.

- **Earthworm Activity:** A healthy, undisturbed soil teems with earthworms. Their constant burrowing creates extensive, deep, and durable macropores that function as super-highways for oxygen diffusion and water drainage, overcoming natural compaction.

3. Minimal Disturbance Protects the Ventilation System:

By not uprooting entire plants and avoiding tillage, the PQNK system protects the delicate, self-made infrastructure of root channels, wormholes, and soil aggregates. This minimal disturbance ensures that the natural ventilation system built by biology remains intact season after season.

Summary

In essence, the PQNK system does not actively "manage" oxygen levels. Instead, it establishes a regenerative cycle where the retention of roots and residues feeds the soil biology, which in turn builds and maintains a well-structured, porous soil. This resilient soil architecture is the fundamental factor that allows for a high and self-sustaining oxygen diffusion rate, ensuring that the respiratory needs of the entire soil ecosystem are met without any external inputs.

Footnote: Any Production Process That Inundates Soil With Water, Disturbs Soil Through Tillage, Or Leaves Soil Bare Without Organic Mulch Cover Does Not Qualify As Natural Ecosystem Science For Production Agriculture.

PQNK, to be pronounced as 'picnic', which stands for Paedar Qudratti Nizam Kashatqari, and means: the regenerative & sustainable Pristine Organic Farming System.

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