Zymbiox
Restoring soil through biology

Zymbiox: Restoring Soil Through Biology.

Eliminating the legacy of plastic contamination to secure agricultural futures.

A biological framework for degrading persistent polymers in-situ, restoring soil physics, and unlocking full crop productivity.

The Silent Reservoir: The Crisis Beneath Our Feet.

Terrestrial environments are a massive, **overlooked sink for plastic waste**.

4–23x

Terrestrial soils receive 4 to 23 times more plastic waste annually than marine environments.

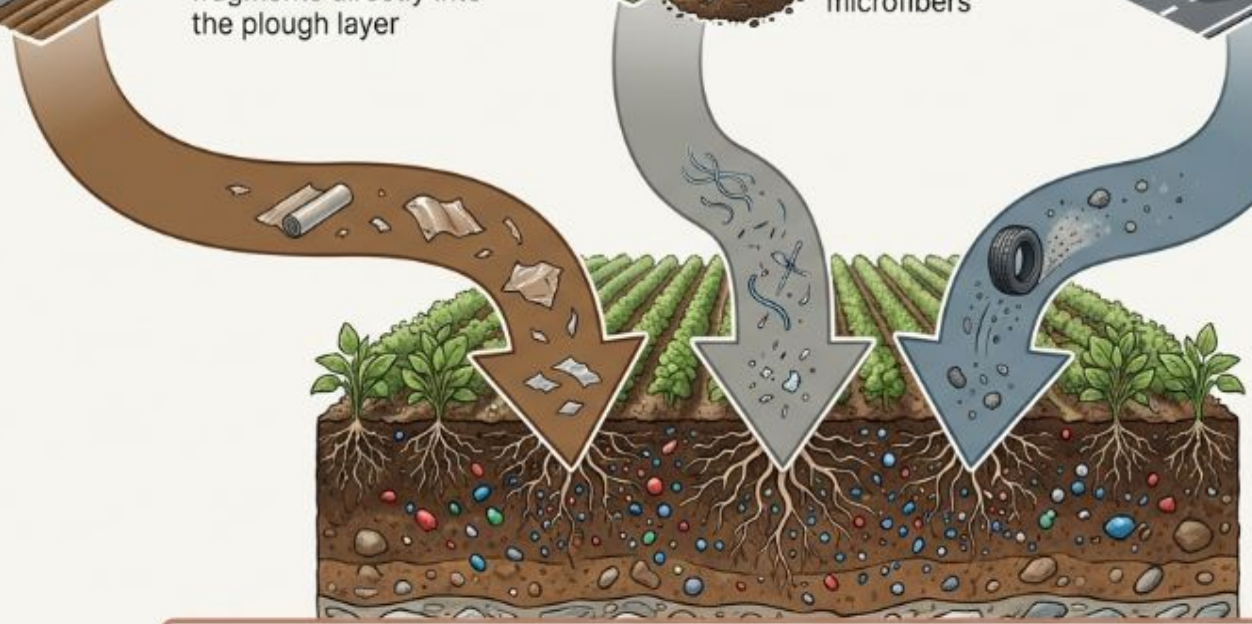
Sources: Agricultural Mulch Films, Sewage Sludge, Tire Abrasion. Global Context: 400 Million Tons plastic production in 2022.

How Your Soil Becomes a Plastic Sink

Agricultural Mulching
Mulch films (LDPE) shed fragments directly into the plough layer

External Inputs
Sewage sludge and compost containing microfibers

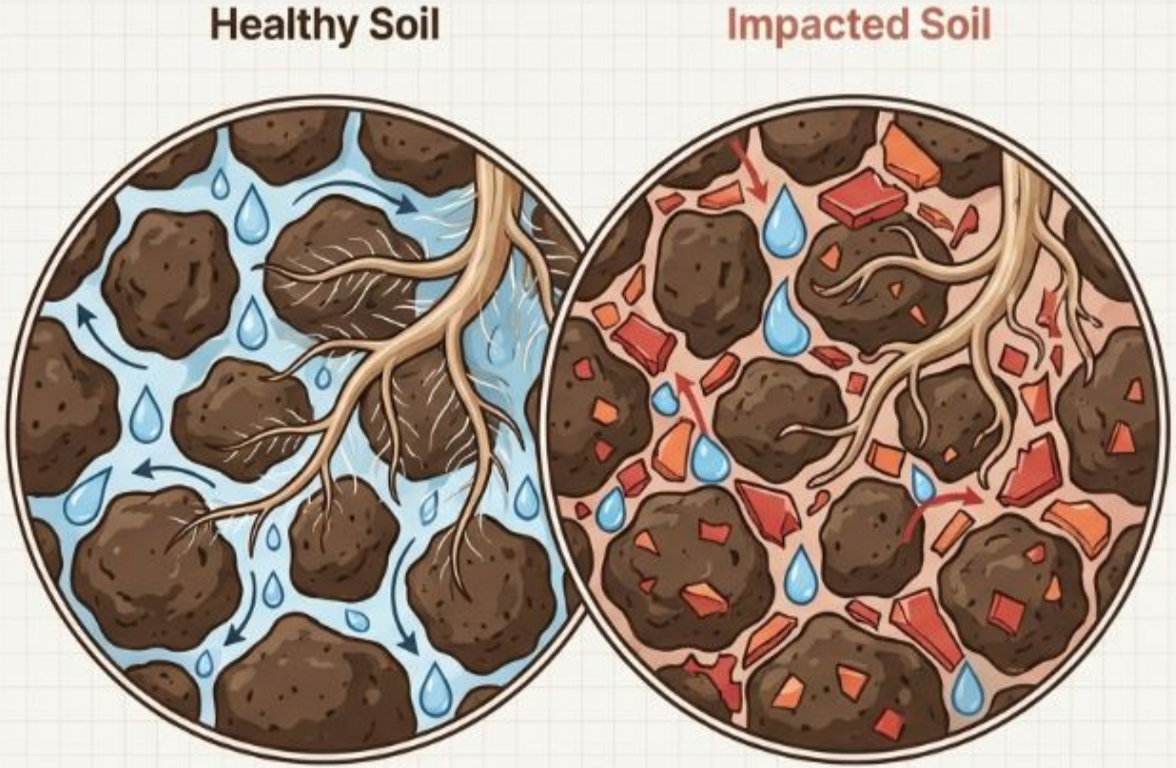
Environmental Deposition
Tire abrasion and atmospheric dust



80–90% of marine microplastics originate from **land-based sources.** Your soil is the first stop.

It’s Not Just Litter. It’s Physics.

Microplastics act as active agents of disruption, altering the fundamental properties of your land.



- **Water Stress:** MPs reduce bulk density and water-holding capacity. 1% LDPE load significantly reduces available water.
- **Nutrient Blockage:** Clogged pores reduce hydraulic conductivity, preventing nutrients from reaching the root zone.
- **Result:** Increased need for irrigation and fertilizer to maintain yields.

REPUTATIONAL RISK: ASCENDING THE TROPHIC LADDER

Soil Matrix

Microplastics accumulate.

Primary Consumers

Ingestion by earthworms.

Secondary Consumers

Transfer to livestock/poultry.

Human Food Web

Accumulation via livestock and edible plants.

Crop Contamination: Crack-Entry Mode

- **Lettuce:** Oxidative stress and suppressed growth.
- **Wheat:** Stunted roots and reduced grain yield.
- **Carrots:** Direct accumulation in edible tissue.

You cannot guarantee 'healthy' food if it is grown in a plastic matrix.

Seamless Integration into Your Farming Cycle.

1. Assessment

Analysis of soil type and contaminant profile.

2. Targeted Inoculation

Application via standard spraying or granular mix.

3. Restoration

Passive biological action over the growing season.

No heavy machinery. No excavation. The microbes work while you farm.

Turning Environmental Action into Agricultural Asset.

The Farmer's ROI

The Pain	The Zymbiox Gain
Rising Input Costs: Degraded soil requires more water and fertilizer.	**Input Reduction:** Restored retention = less irrigation & fertilizer.
Yield Uncertainty: Increased drought risk.	**Yield Security:** Reverses stagnation, mitigates drought.
Labor Intensive: Impossible manual removal of fragments.	**Market Premium:** "Certified Plastic Free" produce for retail partners.

Value Proposition: Restoring soil function creates direct economic value, not just ecological compliance.

TRUST & SECURITY: PROTECTING THE FARMING ECOSYSTEM

DATA PRIVACY MODEL

- Strict confidentiality regarding farmer land data.
- Proprietary protection of supply chain mapping.
- Remediation data allows farmers to reclaim land value without reputational damage.

INCENTIVE STRUCTURE

- 'Plastic-recovered' land classifications linked to incentive schemes.
- A trust-based ecosystem where data drives restoration, not penalization.