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MBK Biochar Agronomic Framework – Reclamation & Environmental Remediation

Why Biochar for Land Reclamation?

MBK biochar is exceptionally suited **for** restoring degraded lands, post-industrial sites, mining reclamation zones, and areas affected by salinity or erosion. Its carbon-rich, porous structure supports the rebuilding of topsoil, enhances microbial biodiversity, stabilizes heavy metals, and improves the long-term soil structure.

Proven Benefits

Benefit	Mechanism	Source(s)
Stabilizes heavy metals	Adsorbs Pb, Cd, Zn in soil, reducing leaching into groundwater	Beesley et al. (2011), Mohan et al. (2014)
Revives microbial life	Restores beneficial fungi and bacteria to sterile or acidic soils	Lehmann et al. (2015), Biochar Journal
Improves water dynamics	Increases infiltration, lowers evaporation on bare soils	IBI Reports, Gaskin et al. (2007)
Enhances organic matter	Builds topsoil and carbon stocks in disturbed or eroded zones	Schmidt et al. (2021), FAO
Boosts nutrient retention	Reduces runoff, supports revegetation efforts	Biederman & Harpole (2013), USDA Soils Lab

Target Use Cases

- Mine reclamation (tailings and coal ash areas)
- Brownfield remediation (soils contaminated with heavy metals)
- Post-industrial land restoration (in urban fringe areas)

- Salinity-affected soils (found in coastal and arid zones)

Application Rate Guidelines (per acre)

Reclamation Context	MBK Biochar Rate	Amendment Frequency
High-degradation zones	10–20 tons/acre	Once every 5–7 years
Moderate impact sites	5–10 tons/acre	Every 3–5 years

Mixing Instructions

1. Pre-mix with compost or organic amendments, when possible, to enhance microbial colonization.
2. Incorporate to a depth of 6–12 inches based on the level of compaction and contamination.
3. Use non-tillage methods (e.g., rippers or bio-drills) in areas where the topsoil is shallow or fragile.

MRV & Certification Readiness

- Eligible under Verra, Gold Standard, and voluntary carbon reclamation protocols
Upload geo-tagged batch data to the MBK Portal or BioTASC
- Optional: Environmental remediation documentation (soil test, images, revegetation report).