

Co-Composting with Struvite: Enhancing Phosphorus Availability in Low-P Prairie Soils

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Phosphorus (P) is vital for plant growth, yet global reserves of rock phosphate are depleting. This study explores the potential of co-composting Calcium Phosphate (Cal Phos) and Struvite with organic materials (yard waste, food waste, and manure) to enhance P availability in low-P soils. Composting was accelerated using rapid biodigesters, and nutrient content, including available P, was measured across pre-, post-, and mature compost stages.

Results showed that composting alone did not significantly increase P availability, but blends with Cal Phos and Struvite did. Cal Phos yielded the highest P levels, while Struvite blends with house waste and manure outperformed yard waste.

Future steps include phosphorus fractionation, mature compost analysis, and growth chamber experiments to evaluate plant growth and P uptake in low-P soils. Co-composting with mineral P amendments offers a sustainable solution for improving soil fertility and recycling nutrients.