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Land-applying forest residues restores soil acidity

December 25, 2020



Experimental field in southern Quebec receiving forest liming residues. Photo by B. Gagnon.

Soil acidification, a major issue responsible for agricultural land degradation, affects 50% of arable soils in many countries, including Canada and the United States. Land application of forest-derived residues is one solution for correcting soil acidity—and these forest-derived residues are widely available.

A new *Agronomy Journal* article reports on a 40-week laboratory incubation study where six different forest materials (lime mud, ash from combustion of papermill biosolids or wood, biochar from maple or pine, and de-inking paper sludge) were applied at calcium carbonate equivalence-based rates to two acidic soils. The team used a calcitic lime as a reference.

Results indicated that all forest materials except pine biochar were equally effective as calcitic lime in increasing pH of the two acidic soils. Lime mud, owing to its finer particle size, quickly raised the pH after soil incorporation. Based on the liming value, the researchers needed the lowest amount of lime mud in terms of dry mass to increase soil pH. In addition, the team found wood ash and maple biochar were significant direct sources of P, K, and Mg.

This study demonstrated that forest-derived residues can efficiently remediate soil acidity and improve soil fertility. Diverting these materials from landfills toward a more beneficial use in agriculture would be ideal.

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Gagnon, B., & Ziadi, N. (2020). Forest-derived liming by-products: Potential benefits to remediate soil acidity and increase soil fertility. *Agronomy Journal*, 112, 4788–4798. <https://doi.org/10.1002/agj2.20421>

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