Review of: "Excessive Aluminum in Soil: Review Paper"

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Potential competing interests: No potential competing interests to declare.

Though this paper focuses on a very important subject in Soil and Plant Sciences, the review is basically very scant and devoid of many details. The topic of acid soil infertility and aluminum toxicity is a major aspect of soil chemistry and fertility, and a lot of information is published that the review did not include. The paper cannot be accepted in its current form.

Some comments are as follows:

1. A major source of aluminum, especially in tropical soils, is from the weathering of alumino-silicate minerals. As the reviewer has shown in Figure 1, aluminum becomes very soluble in acid soils, and various forms of aluminum hydroxides become available as pH increases.
2. Figure 1 must be discussed more fully. The forms of aluminum hydroxide carrying net positive charges react with phosphate ions (as applied as fertilizers) to form complexes that either precipitate or the phosphate is adsorbed by the aluminum to form other complexes of low solubility. Thus, a major impact of aluminum in the soil-plant system is that applied phosphorus is rendered unavailable to the plant. This has economic implications.
3. Furthermore, aluminum forms complexes with soil organic matter (organo-metal complexing), thereby stabilizing the organic matter from easy attack and decomposition by microorganisms. Indeed, there are many soil reactions of aluminum that have been discussed in the literature that the reviewer has not considered at all.
4. With regard to remediation, the review simply glosses over and has not provided any concrete examples. Phytoremediation is not new nor recent. However, some examples of plants used in the process must be given. Provide details where the phytoremediation methods were successful.
5. Provide examples of genetically modified plants that have been used to reduce or remediate excess aluminum and provide examples where this technology was successfully applied.
6. Provide examples of the use of nanotechnology for remediating excess aluminum.