

Abstract Submitted
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Strategies to Improve Plant Productivity by Increasing the Activity of Organic Micronutrients in Soils HOJUN YOO, RICHARD KYUNG, CRG-NJ — Organic farming is a sustainable way of agriculture. The micronutrient homeostasis in organic and hydroponic farming is currently emerging as a key factor in maintaining plant health and preventing nutrient deficiency. Recently, micronutrient chelation through various molecules has been studied to be a potential therapeutic treatment for nutrient deficiency in plants. These molecules have the ability to selectively chelate micronutrient molecules into the plant cell to increase the micronutrient level and thus can be used to prevent the development of irregular yellowing and leaf deformities. In this research, a computational method employing quantum chemistry was used to model various organic hydroponic fertilizer or chelators that are potential candidates for the chelation in organic farming. The molecules were assessed for thermodynamic stability, reactivity, and polarization. This paper aims to model and investigate the optimal design for such nutrients that can be utilized in potential organic and hydroponic farming. Also this paper studies how local governments can provide technical support for the development of organic agriculture such as organic hydroponic fertilizer and eco-friendly pest repellents.

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