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The story of phosphorus: Global food security and food for thought

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Abstract

Food production requires application of fertilizers containing phosphorus, nitrogen and potassium on agricultural fields in order to sustain crop yields. However modern agriculture is dependent on phosphorus derived from phosphate rock, which is a non-renewable resource and current global reserves may be depleted in 50–100 years. While phosphorus demand is projected to increase, the expected global peak in phosphorus production is predicted to occur around 2030. The exact timing of peak phosphorus production might be disputed, however it is widely acknowledged within the fertilizer industry that the quality of remaining phosphate rock is decreasing and production costs are increasing. Yet future access to phosphorus receives little or no international attention. This paper puts forward the case for including long-term phosphorus scarcity on the priority agenda for global food security. Opportunities for recovering phosphorus and reducing demand are also addressed together with institutional challenges.



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Keywords

Phosphorus; Phosphate rock; Global food security; Fertilizer; Peak phosphorus; Reuse; Scarcity

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