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| Article title | Lime Microdosing: A new Liming Strategy for Increased Productivity in Acid Soils |
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| Abstract | <p>Despite the effectiveness of the fertilizer microdosing technique, lime microdosing to alleviate the negative impacts of soil acidity has not been comprehensively assessed. In a three-year study at four sites across three countries (one in the USA, two in Ghana, and one in Burkina Faso), we evaluated the effectiveness of the microdosing technique for lime application to alleviate the adverse effects of soil acidity in cropping systems, using corn (<i>Zea mays</i> L.) as the study crop. Lime microdosing (LMD) was evaluated at four lime application rates, including 5%, 10%, 25% and 50% of the calculated lime-requirement rate (LR), which was compared to the traditional lime broadcasting strategy using 75% and 100% LR. Averaged across all experimental sites for the duration of the study, LMD with 25% LR resulted in similar grain yield, and nitrogen, phosphorus, and potassium recovery efficiency as those of the traditional lime broadcast techniques with a 100% LR, but significantly greater than those of the lime broadcast techniques with 75% LR. Post-harvest rhizosphere Al saturation percentage of the LMD with 25% LR was similar to that of the traditional lime broadcast techniques with a 100% LR. However, LMD with lime application rates lower than 25% LR was not agronomically effective. The combined results suggest that LMD could be an efficient liming technique, and that with this technique, as little lime material as 25% LR could be used to mitigate the negative impacts of Al toxicity associated with soil acidity. Nevertheless, economic analyses are required to determine the profitability of utilizing the LMD technique to mitigate the negative impacts of soil acidity on crop production relative to the traditional lime-broadcast approach.</p> |
| Publication date | 2023-11 |
| Link to the actual article | http://dx.doi.org/10.1002/saj2.20610 |