

Article title	Ameliorating incongruent effects of balanced fertilization on maize productivity in strongly acid soils with liming
Topic Keywords	Grain, Nutrient use efficiency, Balanced fertilization
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Abstract	<p>Several studies have recommended balanced fertilization for increased and sustainable maize productivity in northern Ghana. However, the effectiveness of balanced fertilization in strongly acid soils is unknown. We conducted nutrient omission trials on strongly acid soils in four communities in northern Ghana to quantify impact of balanced fertilization and its synergism with liming on maize productivity. We evaluated the following treatments, each with and without liming: (i) balanced fertilization (BF), which contained all essential limiting nutrients, (ii) BF without sulfur (minus-S), (iii) BF without zinc (minus-Zn), (iv) BF without boron (minus-B), (v) NPK-only, and (vi) control. Without liming, maize yield was generally low (ranging from 0.4 to 2.2 t ha⁻¹) and followed the order: minus-Zn > NPK-only > BF = Minus-S = Minus-B > Control. However, regardless of fertilization treatment, liming significantly increased maize productivity with grain yields ranging from 0.7 to 4.2 t ha⁻¹, with BF having the greatest yield. With liming, the minus-Zn treatment resulted in a ≥ 30% yield decrease, compared to BF. The combined data suggest that in strongly acid soils, unless lime is applied, addition of micronutrients to NPK fertilizers would not have the desired effect on maize productivity. Without lime application to such soils, omission of Zn from BF in will not only reduce production cost but could have a positive impact on maize productivity. However, we recommend that BF in strongly acid soils should be accompanied by liming to ensure increased and sustainable productivity.</p>
Citations	Sampson Agyin-Birikorang, Raphael Adu-Gyamfi, Ignatius Tindjina, Job Fugice Jr., Haruna Waku Dauda, Upendra Singh & Joaquin Sanabria (2022) Ameliorating incongruent effects of balanced fertilization on maize productivity in strongly acid soils with liming, <i>Journal of Plant Nutrition</i> , 45:17, 2597-2610, DOI: 10.1080/01904167.2022.2064293
Link to the actual article	https://doi.org/10.1080/01904167.2022.2064293
Publication date	2022-04-18