Effects of pH, Nitrogen and Phosphorus on the Establishment and Growth of *Moringaoleifera* Lam

Innocent Pahla, Fanuel Tagwira, Tavagwisa Muziri and James Chitamba

Abstract

Adoption and production of Moringa oleifera Lam. as an agroforestry and vegetable crop in Zimbabwean smallholder farming sector is considerably low. pH, phosphorus and nitrogen have been identified as major limiting factors for Moringa initial establishment and growth. A study was carried out to investigate the effects of pH, N and P on initial establishment and growth of M. oleifera. The objectives of this study were to determine optimum application rates of agricultural lime, N and P, and interaction of lime and fertilizers on Moringa growth. Sandy soil from Marange was used in the greenhouse experiment at Africa University. Three lime levels (0, 4000 and 8000 kg ha^{-1}) and four N levels (0, 200, 400 and 800 kg ha^{-1} ammonium nitrate) were combined factorially with four levels of P (0, 100, 200 and 400 kg ha^{-1} P_2O_5), in a randomized complete block design. Moringa plant height, shoot dry matter and root dry matter significantly increased with an increase in the amount of lime, N and P applied. Significant interaction between lime and fertilizers was observed, with best results being obtained where 276 kg N ha^{-1} and 400 kg/ha P_2O_5 were applied at a pH of 6.2 (4000 kg ha^{-1} lime).