

Abstract

Onion (*Allium cepa*) is a vital crop both as a dietary staple and a source of income for most farmers, with significant market benefits. However, its potential as a functional food is limited due to poor agronomic practices affecting the market, leaving a huge gap and thereby reducing its marketability. Therefore, this research aimed to investigate the effects of sulphur, calcium and magnesium supplementation on the marketability of onions. The research was an open-field experiment where an RCBD layout was adopted across major onion production areas in Kenya: Kisaju-Kajiado and Koma-Machakos. Experimental treatments included varying levels and combinations of S, Ca and Mg supplementation, and effects were evaluated. Preliminary tests, including Levene's, Kolmogorov-Smirnov, Durbin-Watson and Shapiro-Wilk test; Cox and Snell, Nagelkerke and McFadden tests for normality, linear and multinomial regression, including collinearity were performed using SPSS software and the data was found to be parametric. Analysis of Variance tests were further performed, and where significant differences were found, a post hoc test was performed and results displayed. Significant differences were found as a result, and therefore, the null hypothesis was rejected, as varying levels of nutrient supplementation significantly affected the onion cost-benefit gains. S, Ca and Mg at 40 kg/ha had the highest gross market returns as well as net profitability per kg, with a mean of KES 107.04 gross market price per kg on the "Texas Grano" variety with a total of 15 onions and KES 103.49 net profit mean return on the "Red Creole" variety with a total of 10 onions, respectively. Therefore, this study concluded that S, Ca and Mg supplements significantly improve onion marketability and are therefore recommended to farmers intending to achieve high gross market returns as well as higher net profitability