AGRONOMIC PERFORMANCE OF MEDIUM MATURING MAIZE VARIETIES UNDER OPTIMUM AND LOW NITROGEN CONDITIONS

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ABSTRACT

Maize is a staple food in Zimbabwe, mostly important for its starch content and as a source of income for both commercial and small-scale farmers. Of the three major plant nutrients, nitrogen is a vitally important plant nutrient and is the most frequently deficient of all nutrients. The agronomic performance of two maize varieties (PHB30G19 and SC635) were assessed at different nitrogen levels of 0kg ha\(^{-1}\), 79.5kg ha\(^{-1}\) and 159kg ha\(^{-1}\) in a 2×3 factorial experiment laid in a randomised complete block design (RCBD) at New Upper Romzy farm in Lion’s den with 3 replications. The objectives of the study were to test the effects of N levels on plant height, ASI and grain yield. The results obtained indicate that grain yield greatly decreased with a decrease in nitrogen application with PHB30G19 performing better than SC635. At variety level and nitrogen levels there were significant differences in the results, however there was no interaction between nitrogen and variety, this might have been as a result of the independence of these varieties to fertilizer application since they are hybrids which will have been produced after breeding and combining of parents with desirable traits. The varieties possessed either a strong capacity for N-uptake and storage or high N remobilization from vegetative source tissues to the kernels or a combination of these processes. Some varieties of maize have been reported to combine high dry-matter yield and high N content for grain production. Growth traits were enhanced as N fertilizer rate increased. Treatments without N application showed the least performance in terms of growth parameters, ASI and grain yield. Generally, an increasing trend on the measured parameters was observed for increasing rates of N fertilizer. However similar further studies are warranted at various locations using different varieties of maize to provide conclusive recommendations. From the research farmers who cannot afford the synthetic fertilisers might opt for PHB30G19 which will give better yields.