Effect of different levels of NPK and Zn on yield and nutrient uptake of hybrid maize (COHM 5) (Zea mays L.) in Mayamankuruchi (Myk) series of soils of Tamil Nadu

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ABSTRACT

The study was undertaken to find out the nutrient optima for maximum yield and the nutrient removal by hybrid maize through balanced fertilization by a systematic approach on soil fertility evaluation. In nutrient sorption study, the nutrients viz., phosphorus (P), potassium (K) and zinc (Zn) were found as limiting nutrients in these soils and these were considered as deficient nutrients. The optimum nutrient levels of NPK and Zn were fixed by sorption studies as 200: 64: 48 and 4.8 kg ha\(^{-1}\) for this soil series. Nitrogen level was fixed for optimum nutrient treatment at 200 kg ha\(^{-1}\) for this experimental soil series (N\(_2\)P\(_2\)K\(_2\)Zn) with a zero level and one below and one above this level of N were arrived. The field experiment was conducted at farmers’ field with maize (COHM 5) as a test crop. The highest grain yield (8005 kg ha\(^{-1}\)) was recorded in the treatment with 250:64:48:4.8 kg of NPK and Zn ha\(^{-1}\). The highest total N uptake (260.80 kg ha\(^{-1}\)) of maize in Mayamankuruchi series was noticed in the treatment with 250:64:48:4.8 kg of NPK and Zn ha\(^{-1}\). The application of 200:80:48:4.8 kg of NPK and Zn ha\(^{-1}\) resulted in the highest total P uptake (74.80 kg ha\(^{-1}\)). The highest total K uptake (216.24 kg ha\(^{-1}\)) was observed for the treatment of 250:64:48:4.8 kg of NPK and Zn ha\(^{-1}\). The application of 250:64:48:4.8 kg of NPK and Zn ha\(^{-1}\) resulted in the highest total Zn uptake (1.597 kg ha\(^{-1}\)).

Key words: Sorption study, ASI, Optimum nutrient treatment, Mayamankuruchi, Soil series, Zea mays, Grain yield, nutrient uptake