



Integration of Maize Lethal Necrosis Disease Management in Crop/Livestock Intensification to Enhance Productivity of Smallholder Agricultural Production Systems in East Africa

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Abstract

Africa Research in Sustainable Intensification for the Next Generation (Africa RISING) is implementing research activities in East Africa (EA) using a Crop/livestock intensification approach to improve the productivity of smallholder agricultural systems in the region. Preliminary results on variety selection during the 2012 cropping season revealed that varieties are not a significant factor in bridging the current maize yield gap, while good agronomic and natural resource management are critical factors. But the outbreak and rapid spread of Maize Lethal Necrosis (MLN) in EA has emerged as a big challenge to maize production and has significantly affected the productivity of smallholder maize based agricultural systems as well as the commercial maize production sector, and justifies the use of improved varieties. Results from survey to determine the incidence and prevalence of MLN based on samples from 160 farms in Manyara, Dodoma and Arusha regions of Tanzania have shown 66.5% of MLN prevalence in the three regions with higher prevalence in Arusha and Manyara regions. There was also a 17% incidence of MLN in the three regions with higher incidence in Manyara and Arusha. We evaluated 5,600 maize hybrids in 2015 for resistance/tolerance to MLN and for their agronomic adaptability in Babati under natural MLN pressure and established that CKH140117, CKH140098, CKH140107, CKH140031, CKH140105, CKH140035, CKH140017, CKH140106, and CKH140124 were the top performing hybrids with a mean of 2.4 tons per hectare compared to popular or farmer preferred hybrids H513 and H520 with a mean yield of 0.01 tons per hectare. We recommend that these are the hybrids that should be targeted in studies and practices that address sustainable intensification in maize-based systems in areas with potential for MLND prevalence.

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