

Productivity of farmer-preferred maize varieties intercropped with beans in semi-arid Kenya

O.M. Kitonyo^{1*}, G.N. Chemining'wa², J.W. Muthomi²

1International Maize and Wheat Improvement Center (CIMMYT) – Nairobi, P.O. Box 1041 Village Market 00621, Nairobi, Kenya

2Department of Plant Science and Crop Protection, University of Nairobi, P.O Box 29053 – 00625, Kangemi, Nairobi, Kenya

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Abstract

Farmers in the semi-arid regions grow drought tolerant maize varieties and practice maize-legume intercropping. A study was conducted in Machakos, Mwea and Waruhiu in 2008 short rains and 2009 long rains to determine the performance of maize varieties currently grown in semi-arid regions and their compatibility with beans. Sixteen maize varieties were grown as sole crops or intercropped with beans. The experiments were laid out in randomized complete block design with split plot arrangement and replicated three times. Maize variety and maize plus beans intercrop system were assigned to main and sub-plots, respectively. Using land equivalent ratio (LER) and monetary advantage (MA) indices, productivity of intercropping was evaluated. Results indicated that varieties KCB, Katumani, DHO 1, DHO 2, DK 8031 and Duma 43 were suitable for Mwea and Waruhiu. They tolerated or escaped drought by maturing early. Further, these varieties were compatible with beans in an intercrop system. However, bean yield was significantly affected by maize component in intercrop system and declines of 52% to 59% were observed. Despite the yield reduction of beans in intercropping, this system was shown to be economically viable according to LER and MA indices. All maize varieties failed to produce a crop in Machakos in two seasons. Increased food production in semi-arid areas requires adoption of drought escaping and tolerant varieties and maize-bean intercropping systems. However, areas with severe droughts like Machakos and adjoining regions of south-eastern Kenya require alternative maize varieties or crop species that are more drought tolerant than those currently recommended.

Key words: Maize, beans, intercropping, drought tolerance, semi-arid Kenya.