Kathuli P[1]., J.K. Itabari[1], S.N. Nguluu[1] and E.M. Gichangi[1]*

Kenya Agricultural Research Institute, Katumani, P.O Box 340-90100, Machakos.

* Corresponding author: peterkathuli@yahoo.com

Abstract

Sub-soiling/ripping technology for rainwater harvesting was demonstrated to farmers in agro-ecological zones (AEZs) 4 and 5 in Mwala, Yatta and Kitui Districts in eastern Kenya from 2007-2009. Participating farmers were involved in evaluating the benefits of enhancing soil moisture through use of this technology. The results showed that sub-soiling/ripping for rain water capture increased maize mean total dry matter (TDM) by 29-117% compared with conventional tillage. Mean maize grain yields (kg/ha) was increased by 84% in Yatta AEZ 5 and by 38% in Mwala AEZ 4. Yield increases were more for Katumani Composite B (KCB) maize planted in AEZ 5 than the one planted in AEZ 4. The benefits of rain water harvesting through sub-soiling and ripping were increased when combined with application of 20 kg N plus 20 kg P2O5 /ha at planting in AEZ 5 and 5t/ha farm yard manure (FYM) and topdressing with 20 kg N/ha for KCB maize in AEZ 4. Sub-soiling/ripping enhanced soil moisture retention ($p \leq 0.05$) in the 10-30 cm soil depth. Farmers expressed their willingness to adopt the technology, but indicated the need for the technology to be modified for enhanced adoption. In terms of yield increase, the effect of this technology is greater in AEZ 5 than in AEZ 4.

Keywords: Maize, yield, adoption, soil moisture