Evaluation of Furrow Irrigation Methods on Water Use Efficiency and Yield of Maize in Shebelle and Ganale Rivers of Somali Region

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Abstract

Water scarcity is a major constraint for the production of food in arid and semi-arid areas. Therefore, method of irrigation systems are important concerns to improve water use efficiency without significant yield loss. The objective of an experiment was evaluating the performance of furrow irrigation methods on Maize yield and water use efficiency. The treatments were three furrow irrigation systems and laid out randomized complete block design (RCBD) with three replications. The result revealed that, maize grain yield responded differently significantly across locations to different irrigation methods. The highest grain yield and water use efficiency were obtained from CFI and AFI respectively. from the result obtained highest yield was scored in conventional furrow irrigation water management method at Gode (1777.80kg/ha), Kalafo (2292.4 kg/ha) and Dolo-Addo (1805.30 kg/ha) and it has a significant difference with alternative furrow irrigation and fixed furrow irrigation water management methods. Maximum WUE was observed at Kalafo (7.64 kg/ha/m^3), Gode (4.17 kg/ha/m^3) and Dolo-ado (3.3 kg/ha/m^3) alternate furrow method was statistically higher than both conventional and fixed furrow methods. Therefore, it can be decided that Alternative furrow irrigation increased water use efficiency without significant yield reduction and it can solve the poor irrigation water application in the study areas. As well it will be solution for the environmental problems experienced in the study areas.

Key words: *Alternate Furrow; Crop Water Requirement; Maize; Water Use Efficiency*