

Abstract

This study aimed to assess some priming methods and durations under ranging field capacities of water in Kirinyaga County in Kenya in 2012/2013 growing seasons. A two season field experiment was conducted at Mwea Irrigation Agricultural Development Centre (MIAD) farm to evaluate chickpea advanced lines of ICCV 97105 for growth and growth rates under no priming, hydro priming and halo prime at three levels of i.e. 0.1, 0.2 and 0.3 % NaCl₂ concentration with three priming durations (8, 10 and 12 hours) and varying initial soil moisture levels 100% field capacity (FC), 75 %FC, 50 % FC and 25 % FC). The experiment was laid out in a split plot design with three replications. Pre sowing irrigation, combined priming method and priming duration allocated in the main, and sub-plots, respectively. The control treatment was the pre-sowing irrigation at field capacity (FC). The results revealed the maximum/optimum crop growth rate (CGR) of desi chickpea was achieved with 100% FC during wet season I (October, 2012-January, 2013) which was 181.0kg DM/ha/day, while it was 114 kg DM/ha/day with 90-96% FC during the drier season II (July -Oct 2013). Desi chickpea grows slowly under low seasonal rainfall (311.2 mm) than higher seasonal rainfall (565.1 mm). Therefore, it is necessary to apply higher pre sowing irrigation of up to 100% FC in dry areas. Relating crop growth rate CGR during 75-90 days after sowing (DAS) phase period with DM and CGR to grain yield at harvest 120 DAS revealed that it is possible to predict DM and grain yield with 80.5 and 77.5% confidence by use of linear production functions.