The Plant Production (Scientific Journal of Agriculture), 36(2), Summer, 2013

Evaluating the use of urban treated sewage and nitrogen on yield and forage production of sweet corn

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Received: 20 February, 2011 Accepted: 4 July, 2012

Abstract

This study was conducted to evaluate the interaction of urban treated sewage and nitrogen fertilizer on yield and forage production of sweet corn in research farm of Yasouj, during agronomic year of 2008-2009. Experimental factors consisted of 5 irrigation levels including common irrigation water from emergence (SG=10) to milk stage (SG=82) (I_1), from SG=10 to tassling (SG=50) with sewage effluent and from SG=50 to SG=82 with common irrigation water (I_2), from SG=10 to SG=50 with common irrigation water and from SG=50 to SG=82 with sewage effluent (I_3), alternate irrigation with common irrigation water and sewage effluent till stage (SG=82) (I_4), sewage effluent till stage (SG=82) (I_5), and 3 nitrogen rates (N_0=0, N_{80}= 80 and N_{160}=160 kg N ha^{-1}) in a completely randomized design with three replications. Results indicated that interaction of irrigation and nitrogen was significant on fresh ear yield and canned grain yield. The highest fresh ear and canned grain yield were in treatment I_5N_{80}, as 2548 and 1246 gr m^{-2} and the minimum fresh ear yield and canned grain yield were found in treatment I_1N_0, as 1090 and 360 gr m^{-2} respectively. The interaction of irrigation and nitrogen was significant on biological yield and fresh forage yield. The highest biological yield and wet forage yield were obtained in treatment I_4N_{80}, 5442 and 2897 gr m^{-2}, respectively. The minimum biological yield and wet forage was in treatment I_1N_0, as 2953, 1863 and 447 gr m^{-2} respectively. At I_5 Irrigation level, nitrogen consumption was decreased 50%. In summary, application of sewage effluent reduced used nitrogen fertilizer rate.

Keywords: Sweet corn, Treated Sewage, Nitrogen, Ear yield, Grain yield, Forage yield