

The Effect of Treated Wastewater on Silage Quality Yield of Forage Sorghum (*Sorghum bicolor L.*).

Abstract:

The aim of this study way, investigate the effect of treated wastewater on quality properties of fresh forage and silage of sorghum. A factorial experiment (using R.C.B design) with four replication was conducted at the Agriculture Institute of Zabol University in year 2007. Treatments included six irrigation levels: Tapwater for all growing stages of first control (T₁). Tapwater for all growing stages along with NPK application as second control (T₂). Wastewater during the second half of growing period (T₃). Wastewater during the first half of growing period (T₄). Wastewater and tapwater alternately (T₅). Wastewater during the whole growth period (T₆), tow silage levels: unsilage forage (S₀) silage forage (S₁). Results showed that The irrigation with wastewater lead to increase yield and forage quality. Wastewater treats lead to significant increase ($p \leq 0.01$) macronutrients such as: N, K, Mg, Ca and micronutrients such as: Fe and Zn, heavy metals accumulation in plant was significant ($p \leq 0.01$), and in leaf was higher than stem. But there was not significant difference between treats in stem. Accumulation of Cr, Ni and Mo was significant in leaf ($p \leq 0.01$). According to Duncan test for comparing means the irrigation with wastewater lead to increase significant forage quality properties such as: WSC, CP, EE, OM, DM, ASH. and decrease significant NDF, ADF and ADL. Silage leads to decrease significant total of forage quality properties ($p \leq 0.01$). The treats of irrigation with wastewater and tapwater alternately had lower NDF, ADF and higher fat and favorite CP relative to treats of irrigation with wastewater during the whole growth period. In this study, we recommended that the use of municipal wastewater of Zabol in the form that does irrigate sorghum with wastewater and tapwater alternately which increase the forage quality yield, stabilize the soil and prevent from salinization, sodification, nitrate and heavy metal accumulation, microbial pollutions, in soil and plant.

Key words: Forage quality, Silage quality, Sorghum, Treated wastewater.



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