

**(Shared with others inside and outside the specialization –
Published in International Journal).**

Consecutive seasonal effect on yield and water productivity of drip deficit irrigated sorghum in saline soils.

Saudi Journal of Biological Sciences. vol. 29, pp 2683–2690 (2022).

<https://doi.org/10.1016/j.sjbs.2021.12.045>.

Taia A. Abd El-Mageed ^a, Mohamed O. A. Rady ^b, Mohamed H. Abd El-Wahed ^c, Shimaa A. Abd El-Mageed ^b, Wail M. Omran ^d, Bandar S. Aljuaid ^e, Ahmed M. El-Shehawi ^e, Amira M. El-Tahan ^f, Mohamed T. El-Saadony ^g, **Nasr M. Abdou** ^a

^a Soil and Water Department, Faculty of Agriculture, Fayoum University, Fayoum 63514, Egypt

^b Agronomy Department, Faculty of Agriculture, Fayoum University, Fayoum 63514, Egypt

^c Agricultural Engineering Department, Faculty of Agriculture, Fayoum University, 63514 Fayoum, Egypt

^d Department of Soil Science, Faculty of Agriculture, Menoufia University, Menoufia, Egypt

^e Department of Biotechnology, College of Science, Taif University, P.O. Box 11099, Taif 21944, Saudi Arabia

^f Plant Production Department, Arid Lands Cultivation Research Institute, The City of Scientific Research and Technological Applications, SRTA-City, Borg El Arab, Alexandria, Egypt

^g Department of Agricultural Microbiology, Faculty of Agriculture, Zagazig University, 44511 Zagazig, Egypt

Article status	Shared with others inside and outside the specialization – Published in International Journal	Impact Factor: 4.219
----------------	--	-----------------------------

Abstract

Drought stress destructively affects the growth and productivity of sorghum crop, especially under saline soils. Therefore, Field trials were performed to determine the influence of water stress on water productivity (water productivity for grain, (G-WP) and water productivity for forage, (F-WP), yield of sorghum and soil properties in salt-affected soil (8.20 dS m⁻¹) under different sowing dates and irrigation regimes. The summer sowing (SS) was performed on 1st April while fall sowing (FS) was established on 2nd August. The irrigation regimes were; 100, 90, 80, and 70% of crop evapotranspiration (ET_c). The findings displayed that the fodder and grain yields were increased by 23% and 26% under SS compared to FS over the two seasons 2017 and 2018, respectively. Among irrigation levels, the maximum values of grain and fodder yield were given by 100% of ET_c, while a non-significant difference was observed between 100% and 90% of ET_c. Moreover, the maximum values of G-WP (1.31) and F-WP (9.00) were recorded for 90% of ET_c. Interestingly, the soil salinity was decreased in 0–0.6 m depth, and more decline was noted in 0–0.2 m depth using 90% of ET_c. The highest salt accumulation with inside the soil profile was recorded under 70% of ET_c in comparison to 100% of ET_c. There upon, under water scarcity, application of 90% of ET_c is recommended with SS to save 10% of the applied irrigation water without a significant decrease in grain yield (GY).