Optimizing water productivity and production of sunflower crop under arid land conditions.


Abstract:

Field experiment was carried-out during 2015/16 and 2016/17 seasons at the Agriculture Experimental Station of King Abdulaziz University to investigate the effect of stress and fully irrigations with different plant densities on yield and yield attributes of sunflower and to determine water productivity under the investigated treatments. The design of the experiment was a split block with four replications. Main blokes contained fully and stress irrigation water regimes while the sub mains comprised six plant densities of sunflower cultivar (Helianthus annuus L). Results revealed that decreasing irrigation water regime to 65% of field capacity (FC) reduced daily and seasonal water supplies, yield, yield attributes and oil content of sunflower crop but increased water productivity. Increasing plant density reduced head diameter, seeds yield/plant and seed index. Combination of 50 cm row spacing with 15 cm inter row spacing under 100% FC and 60 cm row spacing with 15 cm inter row spacing under 65% FC produced the highest significant seeds yield and water productivity. In these combinations using full irrigation requirement increased seeds yield by about 10% compared with the stressed one. However, the stress combination increased water productivity by about 38% compared with fully irrigation combination.

Published In: