Maximizing production and irrigation water productivity of canola crop (Brassica napus L) under arid land conditions:

Ismail S. M. 2016

Abstract:

A field experiment was carried out at the Agricultural Experimental Research Station of King Abdulaziz University to study the effect of irrigation level, row spacing and inter-row spacing on productivity and irrigation water productivity (IWP) of Canola. Two irrigation levels, IFull (100% of field capacity) and Imin (65% of IFull), were investigated. Three row spacing, S1, S2 and S3, represented by 20, 40 and 60 cm between rows were studied under each irrigation level. Three inter-row spacing, IRS1, IRS2 and IRS3, represented by 5, 10 and 20 cm between plants, were investigated for each row spacing. Results indicated that Imin reduced seed yield per plant, total seed yield and oil percentage but increased IWP. Decreasing row and inter-row spacing decreased seed yield per plant but increased total seed yield and IWP. The highest oil percentage (36.1%) was obtained from S2 during both growing seasons. The triple interaction optimized total seed yield, IWP and oil production. The best combination was IFull–S1–IRS2 with average production of 8430 kg ha⁻¹ seed yield which is expected to produce 2990 kg of oil, followed by Imin–S1–IRS1 which produced 6750 kg ha⁻¹ seed yield with about 2270 kg ha⁻¹ of oil. Application of this combination saves 35% of water but reduces oil production by 24%. Copyright © 2016 John Wiley & Sons, Ltd.

Published In:

Irrigation and Drainage, Vol. 65: , pp 254–263