



Effect of weed control and proline treatment on wheat productivity and weed nutrient removal under water stress conditions

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Abstract: Field evaluation of the efficiency of four weed-control treatments (Tribenuron-methyl, Thifensulfuron, hand weeding and unweeded check), three proline levels (0, 100 and 200 mg/L) and their interactive effects on wheat yield and determine the macronutrient loss occurred by broadleaved weeds under three water requirements (100, 75 and 50%) trials on wheat were performed in two successive seasons at the agricultural experimental station of the National Research Centre, Nubaria, Egypt. The data show that the reduction in water applied to wheat significantly reduced number and weight of broadleaved weeds. Macronutrient removal by broadleaved weeds was significantly greater for N, P and K when wheat was irrigated with the full recommended water duty than the other water stress treatments. Weed control treatments in wheat significantly reduced number and weight of broadleaved weeds. Macronutrient loss by broadleaved weeds was significantly reduced for N, P and K under weed control treatments. The data show that spraying wheat plants with proline at 100 or 200 mg/L under 50% irrigation requirement could effectively produce similar grain yield to that achieved when the recommended treatment was applied (100%). The results indicate that WUE increased as water stress increased and gradual increases in WUE were reported when water requirement reduced from 100% to 75% and 50%. Moreover, spraying wheat plants with proline at 200 mg/L under 50% water stress treatment doubled the ability of wheat plants to produce grain yield per irrigation water unit consumed.

Keywords: Wheat, weeds control, water requirements, macronutrient removal, yield.