Optimum rate of nitrogen fertilization for drip irrigated wheat under semi-arid conditions

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Abstract:

Limited water availability in arid and semi-arid wheat production systems increases the need of applying efficient drip irrigation systems. However, there is little information available about the optimum level of nitrogen (N) fertilization for drip-irrigated wheat. A two-years field study in the semi-arid region of Upper Egypt was carried out in a randomized complete block design to investigate the response of drip-irrigated wheat to three levels of N fertilization (N120 D 120, N180 D 180, and N240 D 240 kg ha⁻¹). N240 increased the uptake of N, P, and K by 66.3, 48.6, and 43.5%, respectively, as compared to N120. The application of N240 increased the grain yield by 28.4 and 40.4% and water use efficiency by 27.6 and 41.8% the first and second season, respectively, as compared to N120. Based on the obtained results, it is recommended to fertilize drip-irrigated wheat by 240 kg ha⁻¹.

Keywords:

drip irrigation; nutrients uptake; urea; water use efficiency; wheat yield

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