

عنوان مقاله:

Depth of nitrogen fertiliser placement affects nitrogen accumulation, translocation and nitrate-nitrogen content in soil of rainfed wheat

محل انتشار:

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خلاصه مقاله:

A field experiment was conducted to examine the effects of different depths of nitrogen (N) fertiliser placements on N accumulation, remobilisation and NO₃–N content in soil of rainfed wheat. Nitrogen was applied on the surface (D1) and in the 10 cm (D2), 20 cm (D3) and 30 cm (D4) soil layers from 2010 to 2012. Compared with D1 and D2, D3 and D4 treatments obtained significant higher N distribution amounts in grain and N accumulation amounts at maturity. D3 and D4 treatments increased the N accumulation amount of vegetative organs at anthesis and at maturity. D3 treatment resulted in significantly higher N translocation amounts from vegetative organs to grains compared with D1 and D2 treatments and had no significant difference with D4 treatment. Compared with the D1 and D2, D3 and D4 treatments obtained significant higher NO₃–N contents in the 20 cm to 120 cm soil layer at anthesis from 2011 to 2012. However, D3 treatment showed no significant differences with D1 and D2 treatments at maturity in terms of the NO₃–N contents in the 40 cm to 100 cm soil layer. D4 treatment produced the highest NO₃–N contents in the 40 cm to 140 cm soil layer. Grain yield, N uptake efficiency, apparent N recovery efficiency, N agronomic efficiency and N partial factor productivity were significantly increased by D3 and D4 treatments. These results suggest that the D3 treatment facilitates the best wheat production and highest efficiency among all treatments.

کلمات کلیدی:

Nitrogen fertiliser placement, Nitrogen accumulation, Nitrogen translocation, Nitrate-nitrogen content, Grain yield, Rain-fed wheat

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