

Effects of Nitrogen and Cycocel Application on Soil Nitrate Pollution and Agronomic Characters of Rice (*Oryza sativa* L.)

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Abstract

Nowadays, due to the effective role of nitrogen fertilizer in growth, yield and crop quality, farmers apply large amount of chemical fertilizers. High application of nitrogen fertilizers has caused soil and water pollution and environmental dangers, higher nitrate accumulation in plant, and different disease risks in human and livestock. In order to investigate the effects of nitrogen and cycocel application effects on soil nitrate pollution and agronomic traits of rice, an experiment was arranged in split plot based on a completely randomized block design with three replicates at Sari region (north of Iran) in 2010. The main factor was nitrogen in four levels and cycocel was considered as a sub factor in three levels. Results showed that maximum and minimum plant height and fourth internodes bending moment were obtained in 0 and 150 kg N ha⁻¹, respectively. Higher filled spikelet percentage per panicle, grain yield and harvest index were obtained in 100 kg N ha⁻¹ application. Application of N up to 150 kg N ha⁻¹ increased soil nitrate by 44.7 percent. As cycocel application decreased, the plant height and panicle length were reduced, but tiller number per plant, filled spikelet percentage per panicle, and grain yield were increased.

Keywords: Rice, Nitrogen, Cycocel, Nitrate pollution, Grain yield.

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