

Turkish Journal of Agriculture and Forestry

Turkish Journal

of

Agriculture and Forestry



The Effect of Wheat Straw, Corn Straw and Tobacco Residues on
Denitrification Losses in a Field Planted with Wheat

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Abstract: A field experiment was conducted to determine the effects of different organic residues (OR) (e.g., wheat straw corn straw and tobacco residues) on nitrogen mineralization and denitrification loss (N_2O-N) using application rates recommended to local farmers. Nitrate and ammonium analyses were carried out on periodically collected soil samples. In-situ denitrification loss was determined using the acetylene inhibition technique (AIT). The results revealed that OR application increased N mineralization significantly. In the favorable conditions for nitrification and intensive mineralization period, NO_3^-N accumulation at 0-60 cm depth peaked at 163.0, 177.7 and 226.6 kg N ha⁻¹ in plots with wheat straw, corn straw and tobacco waste, respectively. In-situ denitrification measurements showed that intensive mineralization, depending on temperature and humidity conditions, significantly increased denitrification losses. The denitrification values measured showed a variation between 7.58 and 17.40 kg N_2O-N ha⁻¹. The results also showed that the effect of organic substrates on N loss via denitrification was highly dependent on the type of organic substrate used, and the C/N ratio of the organic substrate played an important role in N loss by denitrification.

Key Words: Wheat straw, corn straw, tobacco waste, denitrification

Turk. J. Agric. For., **26**, (2002), 349-353.

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