

## **Characteristics of mobilization and transformation of nitrogen in different riparian zones of a hilly-plain watershed in eastern China**

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Riparian zone is a buffer zone of nutrients and other contaminants from highland to watercourse. Properties of riparian soils can regulate the geochemical behavior of nutrient elements. Characteristics of distribution, mobilization and transformation were investigated for nitrogen in different riparian profiles (woodland, grassland, cropland and bareland) and correlations between nitrogen forms and soil properties were discussed. Results showed the woodland riparian profile had a higher nitrogen concentration and drastic spatial variations, and the bareland riparian profile had a lower nitrogen concentration and narrow spatial variations. Total nitrogen and nitrate nitrogen in soils decreased significantly and ammonia nitrogen decreased gently along the highland-watercourse section. Nitrogen concentrations in surface soils were significantly higher compared to subsurface and deep soils in vertical profiles, which indicated surface soils accumulated most nitrogen. But nitrogen distributions in groundwater differ from riparian soils. Nitrogen components in groundwater of cropland profile had the highest concentrations, woodland and bareland riparian zones showed the lower nitrogen concentrations. Nitrate nitrogen fluctuated remarkably in riparian groundwater, especially for cropland profile. Denitrification potential and mineralization potential of soil nitrogen showed a similar order of cropland > woodland > grassland > bareland, which indicated land use took an important role in nitrogen transformation. The correlation analysis showed organic matter, clay fraction and microbial biomass can affect significantly the nitrogen mobilization and transformation. Meanwhile, soil compositions also showed apparent effects on nitrogen changes in riparian zone.