We quantified atmospheric N deposition using ion exchange resin tube collectors filled with mixed bed cation/anion exchange resin (AmberliteTM IRN 150) that had been rinsed with deionized water prior to deployment in the field. We placed five collectors in the open fen. In addition, 2 resin tubes, sealed at the top, and placed in the field within PVC sleeves, served as blank controls. A plastic funnel with a collection area of 400 cm2 channeled precipitation into the resin tubes. We collected and replaced tubes in mid-May and mid-October. For the October-May periods, we affixed a 1-m extension tube to each collection funnel to capture snowfall, which upon melt would drain into the resin tubes. We extracted retrieved resins with 1 M KI and analyzed the extract solutions for NH4+-N (phenate method) on a Seal AA3 AutoAnalyzer and for NO3--N by ion chromatography (DionexTM ICS 1500). We subtracted volume-weighted concentrations in blank resin tube extracts from concentrations in extracts from exposed resin tubes and corrected deposition values for laboratory-determined extraction efficiencies (96.9 and 98.2 % for NH4+-N and NO3--N, respectively; Wieder et al.).