

Table 7.4: Partitioning and recovery of ^{15}N tracer retained by 140-year-old *Picea abies* in the Fichtelgebirge (Waldstein, NE-Bavaria, Germany) four weeks after tracer application. The tracers were applied in April 1994 as a single wet deposition of $4.1 \text{ mmol m}^{-2} \text{ }^{15}\text{NH}_4^+$ or $^{15}\text{NO}_3^-$, respectively. The recovery of the tracers was measured in needles, twigs, stems and roots of *Picea abies* in May 1994 ($n = 5$). The relative contribution of ammonium and nitrate to total mineral nitrogen uptake from the soil was estimated based on two assumptions: (1) the tracers were diluted proportionally to the NH_4^+ -to- NO_3^- ratio in water extracts from the soil organic layer, (2) the tracers were diluted proportionally to the NH_4^+ -to- NO_3^- ratio in 1 M KCl extracts from the soil organic layer (Schmidt, May, Gebauer and Schulze, unpublished data).

Compartment	Absolute ^{15}N tracer uptake [$\mu\text{mol } ^{15}\text{N m}^{-2}$]		Estimated contribution to total N uptake from the soil based on a NH_4^+ -to- NO_3^- ratio of			
	$^{15}\text{N-NH}_4^+$	$^{15}\text{N-NO}_3^-$	2.6 : 1 in soil water extracts [%]		7.6 : 1 in soil 1M KCl extracts [%]	
			NH_4^+	NO_3^-	NH_4^+	NO_3^-
Needles	47	76	17	11	24	5
Twigs	28	39	10	6	14	3
Stem	29	64	11	9	15	4
Roots	53	122	19	17	27	8
Total	157	301	57	43	80	20
Recovery [%]	3.8	7.3				