Table S1. $\Delta^{17}O$ values of NO_3^-, leaching flux of NO_3^-, total metabolic rate of NO_3^- (GDR + uptake), and GNR in the simulated forested soil where the distribution of $\Delta^{17}O$ values of NO_3^- is heterogeneous.

Depth layer	$\Delta^{17}O$ ‰	NO_3^- flux	GDR+uptake	GNR
		kg of N ha^{-1} y^{-1}		
0	28.0	7.0	0.0	0.0
1	25.4	6.6	1.2	0.7
2	22.8	6.1	1.2	0.7
3	20.2	5.7	1.2	0.8
4	17.7	5.2	1.3	0.8
5	15.1	4.8	1.3	0.9
6	12.5	4.4	1.4	1.0
7	9.9	3.9	1.6	1.1
8	7.3	3.5	1.8	1.4
9	4.7	3.0	2.3	1.9
10	2.2	2.6	4.1	3.6
11	2.2	2.6	0.0	0.0

Table S2. $\Delta^{17}O$ values of NO_3^-, leaching flux of NO_3^-, total metabolic rate of NO_3^- (GDR + uptake), and GNR in the simulated forested soil where the distribution of $\Delta^{17}O$ values of NO_3^- is homogeneous.

Depth layer	$\Delta^{17}O$ ‰	NO_3^- flux	GDR+uptake	GNR
		kg of N ha^{-1} y^{-1}		
0	28.0	7.0	0.0	0.0
1	2.2	6.6	84.0	83.6
2	2.2	6.1	0.4	0.0
3	2.2	5.7	0.4	0.0
4	2.2	5.2	0.4	0.0
5	2.2	4.8	0.4	0.0
6	2.2	4.4	0.4	0.0
7	2.2	3.9	0.4	0.0
8	2.2	3.5	0.4	0.0
9	2.2	3.0	0.4	0.0
10	2.2	2.6	0.4	0.0
11	2.2	2.6	0.0	0.0