Supplementary Material

Table S1 Mean annual temperature (MAT; °C) and mean annual precipitation (MAP, mm) in study areas for both study periods. For comparison of study year pairs monthly mean air temperature and sums of the exact study period in each stand were used (data are available by request).

Site Time, years	**Scots pine**								**Norway spruce**							
	Vaccinium vitis-idaea		*Myrtillus*		*Fragaria*		*Cladonia*		*Oxalis*		*Polytrichum*		*Myrtillus*		*Calamagrostis*	
	MAT	*MAP*	*MAT*	*MAP*	*MAT*	*MAP*	*MAT*	*MAP*	*MAT*	*MAP*	*MAT*	*MAP*	*MAT*	*MAP*	*MAT*	*MAP*
Nov2012/ Oct2013	5.2	581	5.8	526	6.9	571	5.8	526	5.8	553	5.5	581	5.2	581	6.9	571
Nov2013/ Oct2014	6.8	724	7.4	620	8.4	518	7.4	620	7.2	703	7.1	750	6.8	724	8.4	518
Nov2014/ Oct2015	6.3	539	6.9	464	8.4	466	6.9	464	6.9	616	6.5	619	6.3	539	8.4	466
July2016/ June2017	5.7	669	6.2	621	7.5	410	6.2	621	6.1	597	5.8	723	5.7	669	7.5	410
July2017/ June2018	5.8	625	6.3	533	7.8	650	6.3	533	6.4	667	6.1	691	5.8	625	7.8	650
July2018/ June2019	7.2	535	7.7	436	9.0	587	7.7	436	7.7	618	7.5	682	7.2	535	9.0	587

Table S2 Nutrient (N - nitrogen, P - phosphorus, K - potassium) remaining (% from initial content) in the incubated fine roots and needle litter

Site / **Time, years**	**Scots pine**												**Norway spruce**											
	Vaccinium vitis-idaea			*Myrtillus*			*Fragaria*			*Cladonia*			*Oxalis*			*Polytrichum*			*Myrtillus*			*Calamagrostis*		
Fine roots	*N*	*P*	*K*	*N*	*P*	*K*	*N*	*P*	*K*	*N*	*P*	*K*	*N*	*P*	*K*	*N*	*P*	*K*	*N*	*P*	*K*	*N*	*P*	*K*
0.1	82	44	20	95	51	16	91	100	26	95	50	15	103	77	22	91	56	22	115	71	27			
0.7				111						118	60		134	81		116	64					161		
1.0	69	40	30	97	66	42	110	88	28	96	52	28	100	62	31	90	56	34	94	65	34	127	85	36
1.7	63	44	20	98	74	26	64	86	25	91	66	38	81	73	27	84	68	38	80	65	37	110	83	21
2.0	87			151			84			119			96			99			125			154		
2.8	78			128			97			104			81			102			112			90		
3.0	66			126			96			107			87			97			94			107		
Needle litter																								
0.6	102	115	75	66	83					76	80		81	74		104	60		111	95	37			
1.0				65	89	58	61			81	111	61	91	74	37	102	62	70						
1.6	66	88	45	81	110	51				81	72	27	93	69	2	109	51	44	70	58	12			
2.0	62			75			58			82			87			98			60					
2.7	63			77						84			68			90			43					
3.0	62			71			56			84			70			78			44					

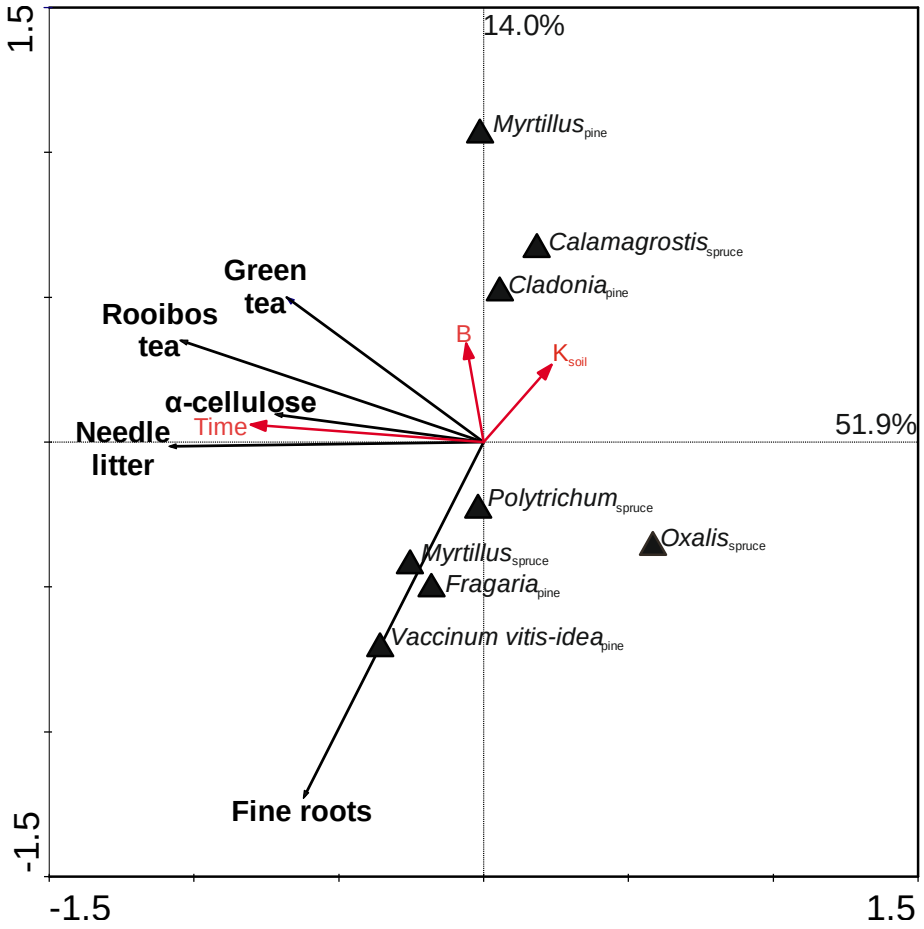

Figure S1 Ordination biplot of redundancy analysis indicating the relative mass loss dynamics of standard substrates (Alpha-cellulose, Green and Rooibos tea) and site specific needle litter and fine roots (black arrows) in relation to decomposing time (1-, 2-, 3-year; red arrow), studied forest sites (filled triangles, n=8) and stands productivity (B) and K content in soil organic layer (red arrows); Monte Carlo permutation test, $p<0.05$. The relative eigenvalues of axis 1 and axis 2 are 51,9% and 14,0%, respectively.

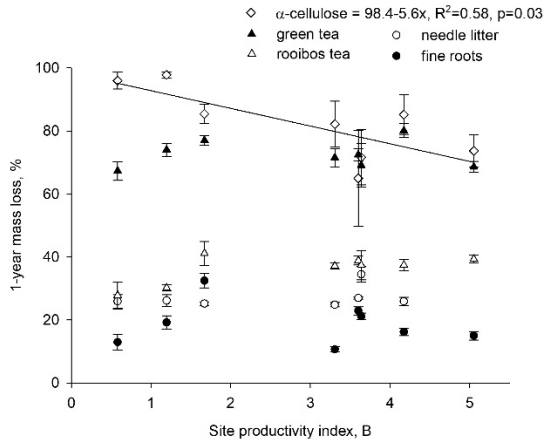

Figure S2. One-year mass loss of different substrate types and site productivity index B (lower B denotes higher productivity).

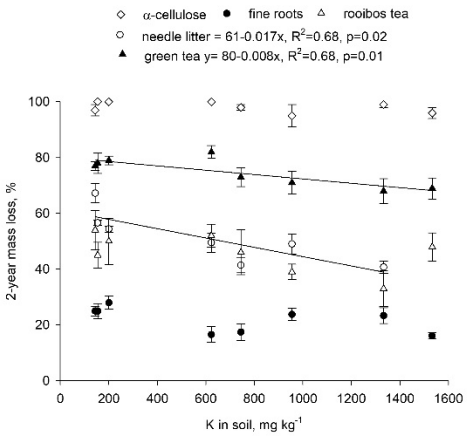

Figure S3. Two-year mass loss of different substrate types and potassium (K) content in the soil organic layer.

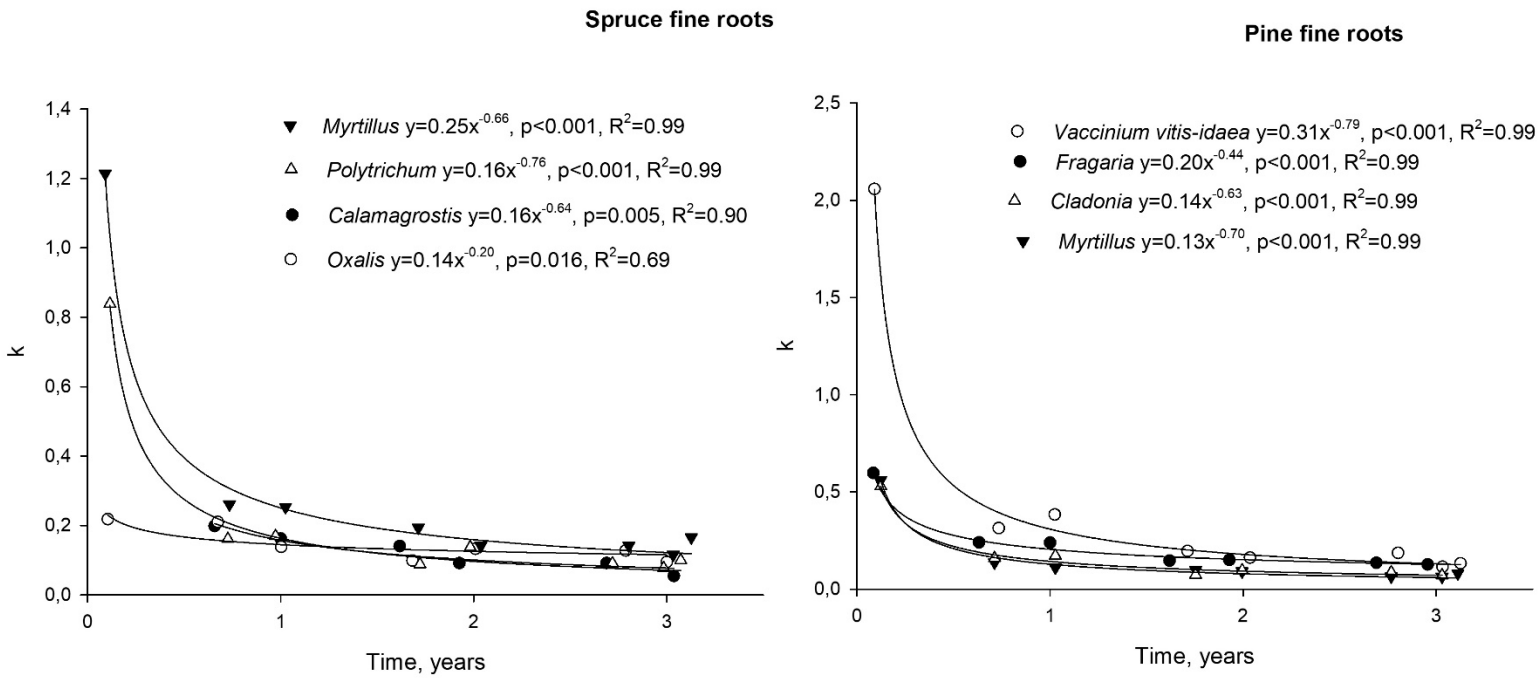

Figure S4. The dynamics of the decomposition rate (k) of the site-specific fine roots in the Norway spruce and Scots pine stands. Note the scale for k is different.

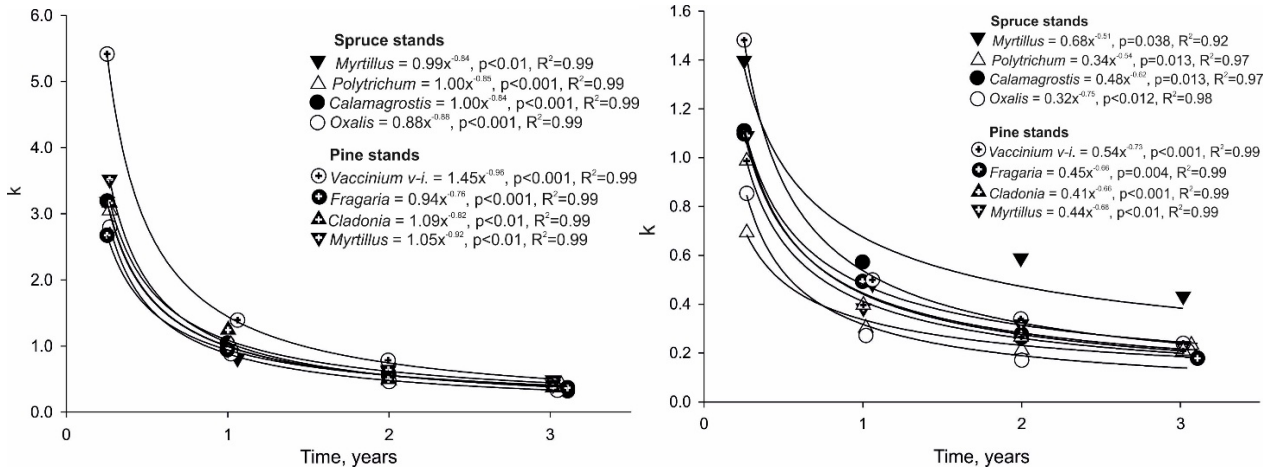

Figure S5. The dynamics of the decomposition rate (k) of the green tea (left) and rooibos tea (right) in the Norway spruce and Scots pine stands. Note the scale for k is different.