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STUDY ON CARBON, NITROGEN AND SULFUR IN LITTER *QUERCUS ROBUR*, *TILIA* SP., *CARPINUS BETULAS,* AND *FAGUS SYLVATICA*

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Abstract

The study was efectutat in the period 2011-2012 in four surfaces Stefanesti, Fundata Stalpeni and Mihaesti. The litter sampling was performed during the second half of the growing season.
In field collection was once in about two weeks throughout the growing season. Collectors were made of polyethylene and is provided rainfall evacuation holes to prevent decomposition of leaf material.
The following parameters are analyzed: organic C, total N and sulfur. The carbon organic, total nitrogen and sulfur have been analysed by the dry Dumars combustion method.
The results showed organic carbon found in the limits Nitrogen is a little higher and the amount of sulfur is in the normal range but suprefata from Stefanesti is a little bigger.

Key words: *oraganic carbon, litter, total nitrogen, sulfur.*

INTRODUCTION

Most of the research so far focused on highlighting the influence of differences between deciduous and coniferous stands on soil carbon and nitrogen (Alriksson and Eriksson, 1998; Fried et al., 1990; Wilson and Grigal, 1995). Thus, Nihlgard (1971) showed that in Central and Western Europe amount of C is higher under spruce stands than in the beech, in North America, and Finzi et al. (1998) found differences in soil C and N stands of beech, maple and oak.
With regard to litter, there was a great variability in the content of C and N between stands of deciduous and coniferous (Ovington, 1954; Versterdal, 2002). The influence of trees on soil nutrient content is detected first in the litter, while differences in the mineral soil is found later (Versterdal, 2002).

MATERIALS AND METHODS

The litter sampling was performed during the second half of the growing season.
Leaves collected at a certain date, grouped by circle sample were dried at a temperature of 105^{o}C and then weighed (Anonymous, 2011; Jonckheere et al., 2004).
The organic carbon, total nitrogen and sulfur was determined thoug the dry ignition method by using the Leco Tru Spect CNS automatic analyser (LECO, 1996).

RESULTS AND DISCUSSIONS

Research has been performed in the period 2011-2012 in four surfaces Stefanesti Fundata, Stalpeni and Mihaesti.
Every surface has been installed by 25 collectors, each with a reception area of 0.25 m^2, located in each of the five circles of sample points form five dice. In view limit the potential effects of wind, they were placed at ground height of approx. 1.3 m collectors were made of polyethylene and is provided rainfall evacuation holes to prevent decomposition of leaf material.
Following laboratory analysis to determine carbon, nitrogen and sulfur of research areas.
The results are presented in Tables 1, 2, 3, 4.

Total carbon values analyzed in four research points fit into normal, a little higher is recorded at the Fundata.

Table 1. Analytical data-Stefanesti

Nr. prb.	Species	Nr. circle	C (%)	N (%)	S (%)
1	*Tilia* sp.	C 1-25	44.77	1.329	0.11
2	*Carpinus betulus*	C 1-25	44.08	1.156	0.11
3	*Quercus robus*	C 1-25	47.37	1.659	0.15
1	*Tilia* sp.	C 1-25	44.48	1.290	0.12
2	*Carpinus betulus*	C 1-25	47.10	1.110	0.13
3	*Quercus robus*	C 1-25	43.99	1.382	0.10
1	*Tilia* sp.	C 1-25	46.99	1.330	0.13
2	*Carpinus betulus*	C 1-25	43.95	1.094	0.12
3	*Quercus robus*	C 1-25	44.00	1.598	0.10
1	*Tilia* sp,	C 1-25	43.94	1.285	0.17
2	*Carpinus betulus*	C 1-25	44.07	1.132	0.16
3	*Quercus robus*	C 1-25	46.96	1.554	0.17
1	*Quercus robus*	C 1-25	46.78	1.550	0.08
2	*Tilia* sp.	C 1-25	44.43	1.195	0.06
3	*Carpinus betulus*	C 1-25	44.17	0.980	0.06
1	*Quercus robus*	C 1-25	46.23	1.624	0.07
2	*Carpinus betulus*	C 1-25	43.90	1.176	0.08
4	*Tillia* sp.	C 1-25	45.26	1.156	0.12
1	*Quercus robus*	C 1-25	46.40	1.616	0.22
2	*Tilia* sp.	C 1-25	45.15	1.186	0.15
3	*Carpinus betulus*	C 1-25	44.18	1.341	0.07
1	*Quercus robus*	C 1-25	46.27	1.498	0.04
3	*Carpinus betulus*	C 1-25	44.03	1.295	0.06
4	*Tilia* sp.	C 1-25	44.22	1.175	0.08
1	*Quercus robus*	C 1-25	46.38	1.621	0.06
2	*Tilia* sp.	C 1-25	44.01	0.987	0.09
4	*Carpinus betulus*	C 1-25	43.51	1.180	0.07

Table 2. Analytical data-Stalpeni

Nr. Prb.	Species	Nr. circle	C (%)	N (%)	S (%)
1	*Fagus sylvatica*	C 1-25	45.71	0.616	0.13
2	*Quercus robus*	C 1-25	45.98	0.700	0.13
1	*Fagus sylvatica*	C 1-25	47.53	0.550	0.15
2	*Quercus robus*	C 1-25	45.46	0.680	0.10
1	*Fagus sylvatica*	C 1-25	45.48	0.660	0.09
2	*Quercus robus*	C 1-25	45.97	0.675	0.11
1	*Quercus robus*	C 1-25	46.05	0.686	0.07
2	*Carpinus betulus*	C 1-25	44.79	0.594	0.09
3	*Fagus sylvatica*	C 1-25	45.73	0.648	0.10
1	*Quercus robus*	C 1-25	45.79	0.854	0.08
2	*Fagus sylvatica*	C 1-25	45.03	0.637	0.09

Table 3. Analytical data-Mihaesti

Nr. Prb.	Species	Nr. circle	C (%)	N (%)	S (%)
1	*Quercus robus*	C 1-25	45.25	1.536	0.05
2	*Fagus sylvatica*	C 1-25	46.55	1.073	0.06
3	*Carpinus betulus*	C 1-25	44.43	1.180	0.07
1	*Quercus robus*	C 1-25	46.15	1.643	0.09
3	*Fagus sylvatica*	C 1-25	46.50	0.988	0.12
4	*Carpinus betulus*	C 1-25	43.98	1.090	0.10
1	*Quercus robus*	C 1-25	46.30	1.567	0.09
2	*Fagus sylvatica*	C 1-25	45.63	1.070	0.09
3	*Carpinus betulus*	C 1-25	44.33	1.110	0.11

Table 4. Analytical data - Fundata

Nr. Prb.	Species	Nr. circle	C, %	N, %	S, %
1	*Fagus sylvatica*	C 1-25	48.30	1.958	0.13
1	*Fagus sylvatica*	C 1-25	47.32	1.875	0.11
2	*Fagus sylvatica*	C 1-25	47.47	1.190	0.11
1	*Fagus sylvatica*	C 1-25	47.30	1.255	0.13
1	*Fagus sylvatica*	C 1-25	47.44	1.200	0.16

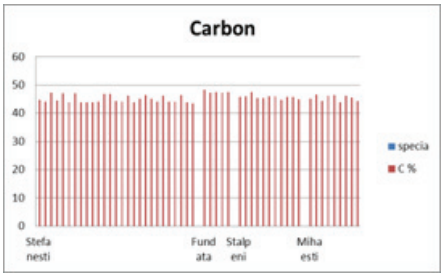

Figure 1. Carbon distribution in the litter sample

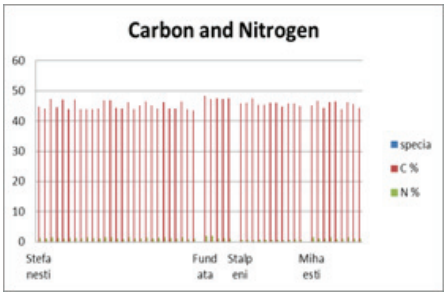

Figure 2. The relationship between nitrogen and sulfer

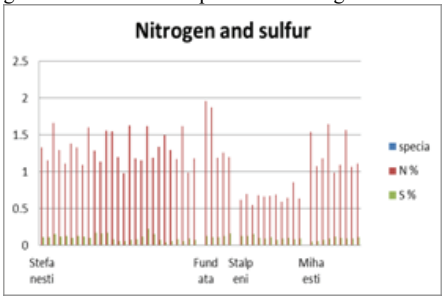

Figure 3. The relationship between nitrogen and sulfer

Surfaces at the bottom shows higher values of nitrogen and sulfur is within normal limits.
Surfaces to Stefanesti the largest amounts of nutrients elements, probably because these elements of wealth in the highway litter (*Tilia* sp., *Carpinus betulus*, *Quercus robus*).

CONCLUSIONS

Based on analyzes conducted to determine nutrient content and settled if within normal limits set at European level.

Sulfur content is within normal limits, with reduced industrial activity.

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