2022 CC DATA ACCOMPANYING REPORT

Description of the level II sample plots

The implementation of the intensive monitoring program in Bulgaria was organized in 3 monitoring plots, incl. the Rojen Complex Background Monitoring Station (CBMS Rojen 0005). Their localization was based on the existing information about the history of forest management, the forest-economic district structure of the country, sources and nature of pollutants as well as requirements for technical equipment of the areas. In the beginning of 2010, after consultation with CC expert team, sample plot 0002 (Staro Oriahovo) was replaced with SP 0004 in the same region.

The following stations were determined:

Vitinia (0001) - this area is situated in the western part of Middle Stara planina (the Balkan mountain), on the territory of Vitinia State forestry district. It is representative of beech forests. The region is under the influence of local and regional pollution sources.

Vitinia (SP 0001)

Staro Oriahovo (0004) – It is situated in the eastern part of Stara Planina (Balkan Mountains), the "Gorska Baraka" area of the Staro Oriahovo State forestry station. The region is representative of oak forests. There are regional pollution sources. In the beginning of 2010 a new sample plot (0004) was installed by taking into consideration the location in relation to the automatic station for monitoring of the atmospheric pollutants and meteorological parameters, the plot for collection of depositions in the open field, main tree species and density. Fifty new trees were selected and marked/numbered for assessment of crown condition.

Staro Oryahovo (SP 0004)

Yundola (0003) – this area is situated in the western part of the Rodope mountains, in the "Starina" area, on the territory of the experimental training forest station of the University of Forestry (UF). The stand of this sample plot is representative of coniferous forests and is far away from local pollution sources.

Yundola (SP 0003)

Rojen (0005) - this area is situated at 1750 m.a.s.l. in the southern part of the Rodope mountains, near the National Astronomical Observatory (NAO). The stand is representative of coniferous forests and is far from local pollution sources. The level II crown condition survey in this sample plot started in 2016.

CBMS Rojen (SP 0005)

The monitoring activities were prepared in compliance with the ICP Forests Manual.

Comprehensive evaluation of the monitoring in 2022

The results of the performed observations in 2022 at the Vitinia field station (beech ecosystem), Staro Oriahovo field station (*Hungarian oak* ecosystem) and Yundola field station (spruce-fir ecosystem) provide the opportunity to characterize the so called “stress factors”, “biological” and “chemical” condition of the monitored stands and seek the connections between them.

Stress factors

In 2022, the significantly lower precipitation quantities and higher temperatures, compared to 2021, are reported as a stress factor in all observed field stations and the Background Complex Monitoring Station (BCMS).

Biological condition

In the beech stand of the sample plot (SP) Vitinia, the condition is in a deteriorated state of health. The reason for the deterioration of the health of the tree stand is an ice break in the previous winter of 2021/2022. At this stage, attacks by insect, pests and fungal diseases have not been detected.

In the SP Staro Oriahovo, the health of the stand remained good, but there was some deterioration compared to the previous year. The reason for the change in the coloration of the leaves is probably the high abundance of the oak bug *Corythucha arcuate* (92 % of the trees) and the fungus *Apiognomonia errabunda* (72 %).

According to the defoliation rate estimates, in the SP Yundola the phytosanitary status of the mixed fir-spruce stand is very good. New frostbites were found on some of the trees. Fruiting bodies of wood-destroying fungi (*Formitopsis pinicola* and *Trichaptum abietinum)* were found on fallen wood and stumps.

A slight deterioration in the health status of spruce trees in 2022 compared to 2021 is reported in the CBMS Rojen. The number of trees with defoliation class ’1’ is increasing significantly, manly at the expense of healthy trees (whit defoliation up to 10%). Trees with biotic impacts on the bark have not change their condition in the last year.

In 2022 the duration of the vegetation period of the monitored beech stand at the core-plot Vitinia was 185 days on average, which is 4 days less compared to 2021.