OBSERVATIONS REGARDING THE FORESTRY MONITORING ACTIVITY IN VADURI-NEAMȚ FOREST WARD

ASPECTE PRIVIND ACTIVITATEA DE MONITORING FORESTIER ÎN OCOLUL SILVIC VADURI – NEAMȚ

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Abstract. *The study was conducted in Vaduri-Neamț forest ward during 2004 – 2005, having as primary objective the forestry monitoring activity started in accordance with the National Monitoring Program for soil and forestry vegetation, approved by H.G. no. 1003/2003. The monitoring activity, realized through tests in permanent sample areas (PSA) pointed out the following aspects: the biggest ratio in the forest ward is represented by fir wood – beech wood association (64%); approximately 8% are practically pure breed (made by a single specie: spruce fir, sylvestris pine, alder); over 75% from the tree associations have a superior productivity; the dominant species in the target area were spruce fir, fir and beech and the forest's sanitary situation is generally good, with moderate actions of some damaging factors (felling and wind crashes, land sliding etc.).*

Rezumat. *Studiul a fost efectuat în Ocolul Silvic Vaduri-Neamț în perioada 2004-2005, având ca obiectiv activitatea de monitoring forestier demarată conform Programului Național de Monitorizare sol-vegetație forestieră, aprobat prin H.G. nr. 1003/2003.*

Monitorizarea efectuată prin sondaje în suprafețe de probă permanente (SPP) a evidențiat următoarele aspecte: ponderea cea mai mare în cadrul ocolului silvic o reprezintă brădeto-făgetele (64%), cca. 8% dintre arborete sunt practic pure (alcătuite dintr-o singură specie: molid, pin silvestru sau anini), peste 75% dintre arborete sunt de productivitate superioară, specii dominante în cadrul zonei analizate s-au constatat a fi molidul, bradul şi fagul iar starea fitosanitară a pădurii în ansamblu este bună, cu acțiuni moderate ale factorilor destabilizatori (doborâturi şi rupturi de vânt, alunecări de teren ş.a.).

From the geographic point of view, the forests administered by Vaduri-Neamț forest ward are placed in the Oriental Carpathians and include the Bistrița's tributary rivers' basins, in it's central part, up-river before Piatra-Neamț city, till Pângărați The ward's surface is in the frame of carpathian sub-province, the Northern Oriental Carpathians area, eastern marginal district of gravel mountains, the group of Obcine's district and of high forests from the marginal pleogenic gravel area.

From the geographical systematization's point of view, the ward's territory from the right bank of Bistrița occupies the two cathetus of Tarcău Mountains (U.P. I and U.P. II) and the left bank (U.P. III and U.P. IV) occupies the last ramifications of the Obcina Stânişoara.

The research was conducted in the frame of the forestry monitoring activity developed in accordance with the National Monitoring Program for soil and forestry vegetation, approved by H.G. no. 1003/2003.

MATERIAL AND METHOD

The forestry monitoring represents the surveillance activity for forest's health and an inventory of the national forestry stock in order to offer, on a permanent base, information regarding the evolution status of the vegetation and the forestry soils, the effects of stress factors (pollution, dryness, the weather conditions changing, diseases and pests) on the forest, the production stock's size and structure.

For monitoring the forestry vegetation, there was necessary to establish a national network (4 x 4 km) of permanent testing surveys in order to watch annually the health status of the trees with in the permanent sample areas (PSA) as well as to make a statistic inventory of the forests on a national and regional level (once at every 5 years).

A survey contains two permanent sample areas (PSA), of a circular shape, placed at a 30 m distance from the survey's center, disposed on a east-west direction in the fields with a plane configuration and on the level's curve in slope fields. Every PSA is made by two concentrically circles of 200 square meters and respectively 500 square meters. Only trees with trunks over 80 mm in diameter are inventoried. The inventory of the trees from the permanent sample areas' content includes: measuring the basal tree diameter, measuring the height of 2 – 3 trees from each diameter category, framing into positional classes (Kraft) and into tree quality classes (Badea O., 1998).

Gathering, validating and processing information was realized during 2004 – 2006, with a specialized informational program INTMON and the study was conducted within the frame of a collaboration between Vaduri Forestry Ward and a group of U.Ş.A.M.V. students, working for their probation period for the Forestry discipline.

RESULTS AND DISCUSSIONS

The forestry vegetation from within the target area is generally composed by three main species from the mountain zone (*Picea abies, Abies alba, Fagus sylvestris)* and for the hilly zone is composed by *Quercus petraea*.

From the conducted study we were able to identify the forestry formations, as well as the surfaces they occupy on production units and on total ward surface.

Table 1

The forestry formations' surfaces

Forestry formation	Surface (ha)	%
(11) Pure spruce fir association	19.0	
(12) Spruce fir – fir tree association	160.1	1
(13) Spruce fir, fir tree and beech tree mixtures	269.7	2
(14) Spruce fir – beech tree association	20.0	
(21) Pure fir tree association	98.5	1
(22) Fir tree – beech tree association	9662.5	64
(23) Fir tree and beech tree mixed associations	219.5	1
(31) Pure sylvestris pine tree association	7.4	
(41) Pure mountain beech tree association	3160.8	21
(51) Pure sessile oak association	627.4	4
(52) Sessile oak – beech tree association	973.5	6
(97) Black alder association	0.4	
(98) White alder association	17.7	
Total	15236.5	100

We observed that the biggest ratio is represented by the fir tree – beech tree associations (64%) in which superior productive fir tree – beech tree associations, the rest being average productive fir tree – beech tree associations. The observations revealed the fact that approximately 89% of the surface is covered with typical mountain forests and the rest of it with hilly forests.

In what concerns the fundamentally natural types' productivity we observed the following:

- 11 473.3 ha (75%) – are superior productive;
- 3 696.6 ha (24%) – are average productive;
- 66.6 ha (1%) – are low productive.

We observed a slightly decrease of the natural tree association's ratio in favor of the artificial ones, along with the altitude. The explain is that at the associations with a big ratio of spruce fir, a satisfying natural repopulating was not completed, most of the times, and so rapid completion was made in order to cover the landscape.

The forests within the Vaduri Forestry Ward represent a value due to their diversity but mostly to their protective functions and the realized parameters in these particular territorial conditions.

The structure's analysis on age and production classes underlined the following aspects:

1. The surface of the tree associations from the first three age classes decreased (especially first age class) while the surface of the mature tree associations increased. One of the causes is the execution mainly of the intermediary cuttings and in a smaller ratio of the mature tree liquidation cuttings.

2. The decrease of the spruce fir tree's ratio is mainly due to a more carefully application of the treatments for a better natural regeneration, quantitative as well as qualitative.

3. The increase of the surface occupies with different species of soft falling leaves trees can be explained only because of the exact identification of the association's element, especially for the young and very young tree associations. in order to determine more accurately the conditioning works' intensity.

4. The analysis of the regeneration mode for the main species indicates that: beech tree and fir tree are provided through natural regeneration (only from seeds), spruce fir tree comes 14% from natural regeneration and 86% from plantations and sessile oak tree comes 98% from natural regeneration and the rest from plantations.

5. The following species were artificially introduced: larch, Euro-American poplars, black pine, locust tree, Douglas fir and white pine. Among these, only larch is found on a more important surface.

6. Only 8% from the young trees in the ward are practically pure (plantations of spruce fir, sylvestris pine or alder), 27% are mixed young trees with a 50 – 80% main specie and the rest of 65% are mixed young trees with less than 50% main specie.

7. For the most of the young trees many floors were identified and for the dominant floor we frequently noticed a production class weaker than the rest of the young trees.

8. The average firmness in the ward was established at 0.78, fact explained mostly by the improvement of the damaging factors' effects (fallings, crashes, slides etc.).

The plant health status of the forest was found good, meaning there weren't registered insects' attacks or cryptogamous diseases with a calamity character. Besides the damaging factors written above we can mention also the organized or unorganized pasturing which reaches moderate values especially in U.P. I, III and IV. In conclusion, the action of the damaging factors is sporadic and affects very small surfaces compared to the total ward surface.

The forestry monitoring inventory within the permanent sample areas from Vaduri ward is made once at every 5 years for all the trees with a basal diameter bigger than 80 mm. The diameters are measured with a measuring tape and the height is measured with the dendrometer, for the same trees that were measured for the past inventories.

CONCLUSIONS

1. The forestry vegetation from the target area, from the territorial and climate conditions' point of view, is generally composed by three main species from the mountain zone (spruce fir, fir tree and beech tree) and sessile oak for the hilly zone. We observed that 89% from the area is covered with typical mountain forests, the rest being covered with typical hill forests.

2. The study's main objective was the trees' inventory in the permanent sample areas, consisting in: measuring the basal diameter of the trees, measuring the height of 2 – 3 trees from each diameter category, framing into positional classes (Kraft) and into tress' quality classes.

3. We observed that the biggest ratio is represented by the fir tree – beech-tree associations (64%) in which superior productive associations prevails (53%), the rest being average productive associations.

4. The plant health status of the forest was found good, meaning there weren't registered insects' attacks or cryptogamous diseases with a calamity character.

5. We also observed that only 8% from the young trees in the ward are practically pure (plantations of spruce fir, sylvestris pine or alder), 27% are mixed young trees with a 50 – 80% main specie and the rest of 65% are mixed young trees with less than 50% main specie.

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