

Measures for the protection of the forest fund

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Abstract Ensuring adequate plant health of forests, protecting them from fires, pollution, diseases and *various pests, whatever their nature, is a special obligation for specialist personnel in each forest district. The knowledge of the situation in time and space, as well as the correct interpretation of all data on the health status of the forest, requires the establishment at district level of an adequate information system; in this respect, forestry field personnel are obliged to report in time the occurrence, multiplication and spread of pests or of other factors affecting the forest and its normal condition. Preventive protective measures will be considered, first of all, their effects being superior both economically and phyto-sanitarily. The forest fund shall be guarded by the rangers holding cantons under the direct guidance of the district chief. Partial and background checks will be carried out for the proper conduct of the guard work, periodically and in a planned way, by the technical staff of the district or the Bihor Forest Directorate. The paper contains a dynamic of the development of the forest fund through which the intermediate stages that the forests of the Lipova Forest District will go through in order to normalize the structure and size of the production fund are envisaged. Within the Lipova Forest District, arboreta on a fairly large area (1,455.52 ha - 10% of the forest area of the district) are affected by drying with an intensity from weak to strong. From the information provided by both forestry personnel and residents in the area, it appears that, from 1983 to 1984, the drying phenomenon manifests itself more strongly than before. Other causes are low vitality and failure to carry out the care work on time, which has led to the development of rare crowns with poor foliage, unable to ensure the viability of the trees. Annually the forest district through the care and management work but especially through the hygiene cuts carried out extracted the dry or drying specimens, ensuring a good plant health of the forests.*

Key words

forest protection, forest district, forest background

The protection of natural resources, the conservation of biodiversity and, in particular, the forest, the powers and responsibilities of central and local authorities, the obligations of physical and legal persons, and the penalties for infringements in this field are contained in *Law No 265 of 29 June 2006 for the approval of G.E.O. No. 195/2005 on environmental protection* [1, 3, 10].

The area of the state-owned forest fund managed by the Lipova Forest District is 15,232.47 ha and is contained in 9 production units [8, 14, 15]. This is 1,479.73 ha smaller than that of the previous administration (16,712.20 ha) [13].

Within the Lipova Forest District, arboreta on a fairly large area (1,455.52 ha - 10% of the forest area of the district) are affected by drying with an intensity from weak to strong [6, 7, 11].

This law, as well as the *Forestry Code*, regulates economic and social activities with an impact on the environment, the forest being the most important

element of it, its effects and positive influences being overwhelming [2, 4, 5, 9, 12].

Material and Method

The paper contains a dynamic of the development of the forest fund through which the intermediate stages that the forests of the Lipova Forest District will go through in order to normalize the structure and size of the production fund are envisaged.

Results and Discussions

1. Protection against wind fells and breaks and snow breaks

When making descriptions of the plot, we aimed at determining the degree of endangerment of the arboreta in relation to the action of wind and snow. Particular attention has been paid to evergreen

plantations outside their natural area, which are more sensitive to the action of snow.

The prevailing winds blowing in the territory of the district are those from northwest and southeast, and their speed and frequency are generally not dangerous to forest vegetation.

In order to highlight the negative effects of climate factors (wind, snow) on the forest, it is necessary to take a retrospective look at this.

Protection against wind and snow fells and breaks is achieved through a set of measures aimed at both increasing the individual strength of the endangered arboreta and ensuring greater stability of the entire forest fund.

To strengthen the edges of the massif through all the forestry culture works, it will be aimed at maintaining trees with low canopies, adapted to the insulation conditions.

In order to prevent or reduce the effect of strong winds and storms, the following measures are recommended in the future:

- compliance with the recommended purpose composition of the arrangement;
- timely application of the care work (especially cleaning) in order to achieve an appropriate slenderness coefficient in the young arboreta;
- compulsory completion of the areas provided with care work;
- ensuring adequate forest safety by carrying out hygiene cuts on time;
- the creation of mixed arboreta;
- the formation of multi-storey and relatively multi-storey arboreta and the conservation of these arboreta;
- the formation of forest margins resistant to the action of winds.

2. Fire protection

The arboreta within the forest district are not subject to long periods of drought but this does not mean that some fires cannot occur because of human negligence especially since the area is frequented by shepherds, forest fruit pickers, forest workers, and tourists.

Statistical data on the intensity and frequency of forest fires show that they occur especially in March-April when locals burn dry plant debris from agricultural land, fires that, under strong winds, become uncontrollable and can also spread into the forests. Another risky interval is the August-September period (sometimes until October and even November) with strong dryness and high solar heat.

In the event of fires, the affected specimens will be extracted and the density of the affected tree restored by additions (in the case of arboreta up to 10-15 years of age) or by afforestation (in the case of arboreta over 15-20 years of age). Afforestation will be made with genetic material from local sources.

Given that, with the exception of the waters forming part of the forest fund (rivers, lakes etc.), the entire forest ecosystem is fuel (it has the aptitude to

burn), it is obvious that it is imperative to protect it, especially the forest, from fire.

The fire prevention activity in the forest fund must be designed, organised and implemented in such a way as to respond to two major needs, as follows:

- reducing the risk of fire outbreaks;
- creating conditions for limiting the fires that have broken out, as close as possible to the initial limits.

3. Protection against diseases and pests

There have been no obvious pest attacks reported so far, but in the past, there have been such phenomena.

The best method of protection against insect attacks or cryptogamic diseases is the creation and maintenance of healthy, viable trees with good vitality, species suitable for stationary conditions and with a diversified composition. In this respect, the stands from natural seeds, in which care work has been carried out on time and properly, with a canopy and a sufficiently rich foliage, are the most resistant and productive.

If natural regeneration is impossible, well-groomed stands created by plantations with healthy, locally sourced saplings, with species suitable for resorts, give good results. The proper implementation of observation and prevention measures to monitor the evolution of pest populations and diseases also plays an important role.

A possible and dangerous source of infestation is forested grassland, which is not supervised in terms of disease or insect attacks and where cuttings have been made (especially in recent years) and where exploitation debris is not cleaned at all.

There are a number of measures that need to be taken at all times to prevent these phenomena in the future:

- elimination of anthropogenic cases (injury of trees, abusive grazing, crimes etc.);
- use in afforestation works of local genotypes of sessile oak, European oak, Turkey oak, beech, sycamore etc., resistant to various attacks and toxicities;
- timely pest control, as far as possible by biological means;
- establishment and conservation of mixed natural-type arboreta;
- introduction into culture of species resistant to various attacks, such as sycamore etc.;
- proper conduct of observation and prevention measures to monitor the development of pest populations and diseases;
- toileting trees for the removal of diseased branches (possible in young trees but more difficult in mature arboreta).

After cutting the cracks, the stumps can be used with copper oxide or mercury-based substances. The same substances may be used to disinfect and paint the trunks where the infected bark has been removed or cleaned. The instruments used shall be disinfected with alcohol or formaldehyde:

- extraction of affected specimens in the event of weak or moderate attacks, i.e. the complete extraction of wood material in the event of strong attacks;
- heavily damaged trees are extracted as a priority. In the case of insect attacks affecting larger areas, soil stripping should be avoided by ensuring natural or artificial regeneration.

The main task of forestry personnel is pest surveillance. Measures for the management of trees with abnormal drying Within the Lipova Forest District, arboreta on a fairly large area (1,455.52 ha - 10% of the forest area of the district) are affected by drying with an intensity from weak to strong. From the information provided by both forestry personnel and residents in the area, it appears that, from 1983 to 1984, the drying phenomenon manifests itself more strongly than before. This drying phenomenon was first observed in oak species, uniformly within the arboreta of low and very low intensity, considering that this drying was due to the natural process of elimination of the dominated specimens remaining in the lower floor. In recent years, the drying phenomenon has also occurred in ash (especially in UP VII Labașint).

The causes of this phenomenon are multiple, including climate factors (prolonged drought period), edaphic factors (decrease in groundwater levels or water reserves in the soil as a result of prolonged droughts), anthropogenic factors (discarding, grazing etc.).

Other causes are low vitality and failure to carry out the care work on time, which has led to the development of rare crowns with poor foliage, unable to ensure the viability of the trees.

Annually the forest district through the care and management work but especially through the hygiene cuts carried out extracted the dry or drying specimens, ensuring a good plant health of the forests.

Conclusions

Consisting, for the most part, of fuel material, the forest fund is continually threatened by fire.

Fires can be caused, on the one hand, by the fact that the forest fund borders land for animal husbandry use (a permanent danger through the work being done for the purpose of cleaning pastures, meadows, and agricultural land) and, on the other hand, due to the fact that the forest and its surrounding area are frequently visited by locals and many tourists attracted by the splendour of landscapes, the purity of air and water, in contrast to the pollution existing in localities and their surroundings.

If these tasks are carried out routinely and consciously and appropriate plant health is ensured through hygiene works, forest protection in this area shall also be carried out. This obligation has been achieved precisely by field staff, which is also illustrated by the insignificant intensity of these attacks over the past decade.

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