SOME DIFFERENTIAL APPLICATION'S PARTICULARITIES IN THE CASE OF MAINTENANCE WORKS OF NATURAL REGENERATIONS IN THE OAK-GROVE - BEECH MIX STANDS

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Abstract: *Natural regenerations represent a concrete and safety modality to obtain valuable stands, characterised by a high level of ecosystem stability and superior productivity. Management of natural regenerations is, most often, a complex activity which involves professionalism and experience as well as adequate logistical framework. The oak-grove—beech mix stands are complex ecosystems, taking into account the complementary requirements raised by both species forming the ecosystem. As a consequence, natural regeneration of this stand requires a series of framework condition for achievement. The stand accessibility represents a basic condition, if applied treatments (interventions)' particularities are taken into account. Beech seedling tolerates to certain extent both the shading and protection provided by mother stand shading; in the case of oak grove, the requirements of in place regeneration are rather different, as longer shading could thus compromise the new stand.*
In order to create favourable conditions for regeneration installation and to achieve the massive state of the future stands, respectively, within an optimum period, a sequence of special works are necessary, the so-called the forestry culture maintenance. These works will be performed differently, being directly correlated with the ecological characteristics of seedling to be subsequently promoted. As a consequence, the creation of a framework of favourable conditions is targeted in order to incorporate the large size seeds into soil– the oaks case and ensuring vegetation optimal conditions for the sprung samples, through moving away herbal and arborescent species. These interventions can be performed manually or mechanically, the proper option being selected function of ground conditions and available logistics. At the same time, it is required that the maintenance works of forestry cultures to be consistently applied in order to ensure the forestry cultures outcomes, as expected by Forestry administrative bodies. The performance at due time (timing) of these works stimulates an exceptional spring and development of the future stand, thus decreasing the time span required to reach the massive state, obtaining a stand's adequate structure and composition. Thus, the stands obtained through natural regeneration preserves the local origins in-situ. For the future, the production of these types of stands will be targeted, as the advantages offered by these stands are multiple and thus creating the prerequisites for an integrated intervention.

Key words: *natural regeneration, mixed stands, improvement cuttings*

INTRODUCTION

Tendings of natural seedlings refers to all measures necessary silvotehnice, leading as promptly, safer and more effective foundation for a new forest of a high cultural value and economic (FLORESCU, NICOLESCU 1998, after BADEA, 1968, CONSTANTINESCU, 1973, FLORESCU, 1973, 1991, to GIURGIU, 1980). Tendings about seedlings installed artificial afforestation subject.

As is known, the mass of copies installed on the surface of regeneration is seedling phase (regrowth-coppice), partially or totally exposed harmful action of abiotic and biotic factors and, unless appropriate measures are taken, regeneration may be compromised. Without appropriate interventions, in each case, the first occupants of the land for regeneration are usually advantaged in the competition.

As a general rule, throught improvement cutting of natural or mixed seedlings, but artificial, forester should guide relations between the storey and other storey seedlings vegetation (stand, underwood and herbaceous especially layer), to regulate relations between species and valuable seedlings of the invaded, the seedlings and regrowth-coppice, of existing unserviceable seedling those used to prevent unwanted effects of unhealthy factors (frost, heat, droughts, landslides, grazing, insects, herbivor chase etc..).

The system of improvement cuttings the regeneration of the forest planted integrates both natural regeneration, artificial and mixed generation or vegetation.

This system refers to the whole complex of operations which is judiciously managed and guided installation, material growth and development of the existence of a new cultivated forest.

Works of helping natural regeneration so as to constitute an indispensable component and fits in the improvement cutting necessary for the production and sound management of cultivated forest regeneration as a key determinant of success. They cover two categories of interventions:

Disadvantage of installation works seedlings (regrowth-coppice);

Improvement cuttings of the instalated seedlings.

The nature, complexity and therefore cost of these works are determined by specific ecological environment is conducted and perfected the process of regeneration.

In terms of convicting and uneven ecological environment created by nature and status of forest regeneration is conducted, it appears that improvement cuttings presents an increased level of diversity.

The effectiveness of these interventions and so and regeneration is conditioned by the choice and implementation takes time and differentiate the ecological and economic correctly founded, the complex of works required, avoiding the use of execution of operations that would load completely unjustified costs production of regeneration.

As risk is waiving the application of those operations and links necessary to secure a full and successful regeneration.

MATERIAL AND METHODS

The current study was done in the UP II Zîmbru.

Forest stands of UP II Zîmbru are contained in the middle of the basin Crişul Alb, located in the middle and high hills on the southern slopes of mountains Codrului. Management unit II Zîmbru, is part of Gurahonţ Forest District, Arad County Forest Administration.

The case study was conducted in three compartments wich are involved in the process of exploitation - regeneration, being included in the management plan.

As research methods were used:

-observation on the itinerary;

-stationary observation;

-the experiment;

-counting;

- simulation;

-comparation.

Issues related to the interventions necessary to maintain the natural regeneration of forest stands studied are presented in Table 1.

Forest stands of u 51A, 53A and 54B are covered with regeneration cuttings, namely group shelterwood system, the purpose of promoting the fundamental nature of species associated with forest type.

Table 1

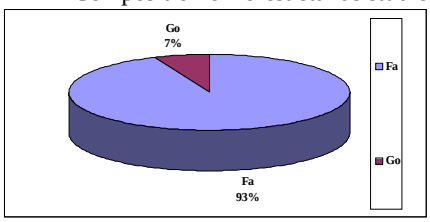
Interventions necessary to achieve the situation in the studied forest stands

No.	u.a.		Necesary operations		
	No.	S(ha)	Pre-release cuttings (ha)	Weedings (ha)	Loosening of the soil (ha)
0	*1*	*2*	*3*	*4*	*5*
1	51A	19,4	1,3	2,7	0,6
2	53A	31,2	2,7	3,5	1,1
3	54B	17,5	1,9	2,4	0,4

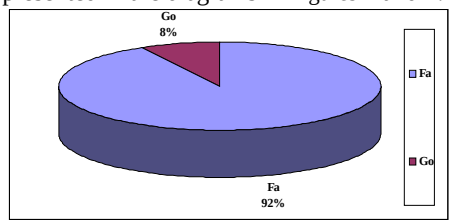
RESULTS AND DISCUSSIONS

From data collected during the processing of the case study were obtained a number of results which are presented below.

Composition of forest stands studied is presented in the diagrams in Figures 1 and 2.



a)



b)

Figure 1: The composition of the basal area for forest stands of u.a. 51A (a) and 53A (b)

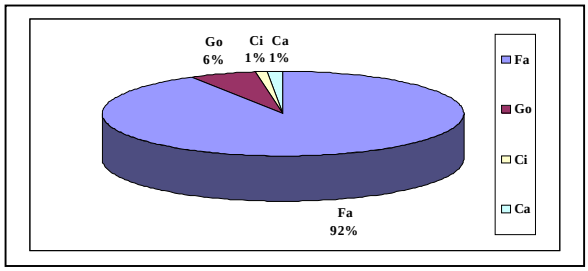


Figure 2: The composition of the stand basal area of u.a. 54B

The proposed operations are detailed in the technical, to highlight their features.

Weeding seedling of weeds

It is a necessary operation if seedling both natural and mixed culture and regeneration and aims at weakening the competition exerted by the waist high weeds or those that produce the sodding soil, competition which can result in reduction in height growth of seedlings and more chosen to enhance the natural removal of juveniles of the species, which are the beginning and more slowly ascending. Enforcement work is based on a technique similar to that used in the culture (FLORESCU, NICOLESCU 1998, after DAMIAN, 1978, FLORESCU, 1994). The works are repeated every year until it rises above seedling herbaceous layer and form a new layer arborescent (solid) tree.

Choosing the number of interventions, the season and the correct execution of technique guarantees the efficiency of their forestry work.

Failure to work technique and especially to simplify it (eg by mowing weeds) not only reduces production costs but can cause compromised by cutting or damage to seedlings regeneration values, which would mean re-afforestation works. It is however advisable where possible, resulting grass to be later used as a food reserve for hunting, for pets, for organic fertilizer, etc.

Figure 3: Biogroups of 51A seedlings of which will be made by works weedings

Soil mobilization operations

Loosen soil operations are needed especially in thinned forest stands before thinning and non-renewable, on land located in the compact, heavy, etc. tasate., unfavorable installation seedling favorable. Each time is associated, where appropriate, with other works to facilitate installation seedlings. It will run only in the dissemination of seeds from fruits at least one middle, and the location surfaces (strips, terraces, fireplaces, color, etc.). Will be considering the position of tree seedlings and how to disseminate the seeds.

Figure 4: The forest stand of u.a. 53A which will be made by mobilizing soil operations

In the plains, if you follow to a good suckering, and may be used to mobilize the entire surface regeneration. Works are expensive and it is preferable for forest and regeneration to be guided so that such work was not needed or their scale to be as diminished. Technique is similar to that used at the installation of artificial vegetation. If after mobilization of natural soil

failed installation seedling (regrowth-coppis) is advisable to resort forthwith to artificial regeneration or mixed.

Pre-release cutting seedlings

Intervention becomes necessary to avoid invasion seedlings valuable as a species and compliance but risk being overwhelmed by juveniles of pioneer species or shoots, remove specimens overwhelming (somewhat similar to or concurrent with removal of high weeds, the raspberries, the blackberry or shock) will run the entire surface or merely part, repeating it annually until seedling has thoroughly grasped the ground and was supported to develop new solid foundation is not endangered.

In natural regeneration will occur only if the seed is that there is a real invasion of heaviness or part of the mass of valuable and viable saplings of the species by species and even the pioneer shrub.

Figure 5: Biogroups of seedling to stand in u.a. 54 B which will be made by operations pre-release cutting

Decision execution of work will be taken only by the observations made in the annual regeneration area, avoiding unjustified increase in costs of regeneration.

Season best of works is in the second part of the vegetation season, but before coloring and leaf fall (August-September).

Analyzing the situation encountered in the field of natural regeneration, have suggested a number of interventions required, which are presented in Table 2, the area involved and that the amount of value.

Table 2

The evidence of works proposed to run in natural seedlings forest stands studied

No.	u.a.	Necesary operations					
		Pre-release cuttings		Weedings		Loosening of the soil	
		S (ha)	Value (RON)	*S* (ha)	Value (RON)	*S* (ha)	Value (RON)
0	*1*	*2*	*3*	*4*	*5*	*6*	*7*
1	51A	1,3	380,250	2,7	413,100	0,6	452,016
2	53A	2,7	789,750	3,5	535,500	1,1	828,696
3	54B	1,9	555,750	2,4	367,200	0,4	301,344

Weeding operations in progress is done in portions of regeneration where the species is mainly beech and sessile - oak.

Pre-release cuttings are done in bio-grups regenerating beech tends to independent biological and specimens of species invasion (blackberry, goat willow, aspen, silver birch) is necessary to draw in order not to jeopardize the stability of these biogroups.

Usually, in portions of stands where consistency is low (k <0.6), although there are conditions for development of seedling, it is strongly competed by herbaceous species - if bio-groups of sessile-oak.

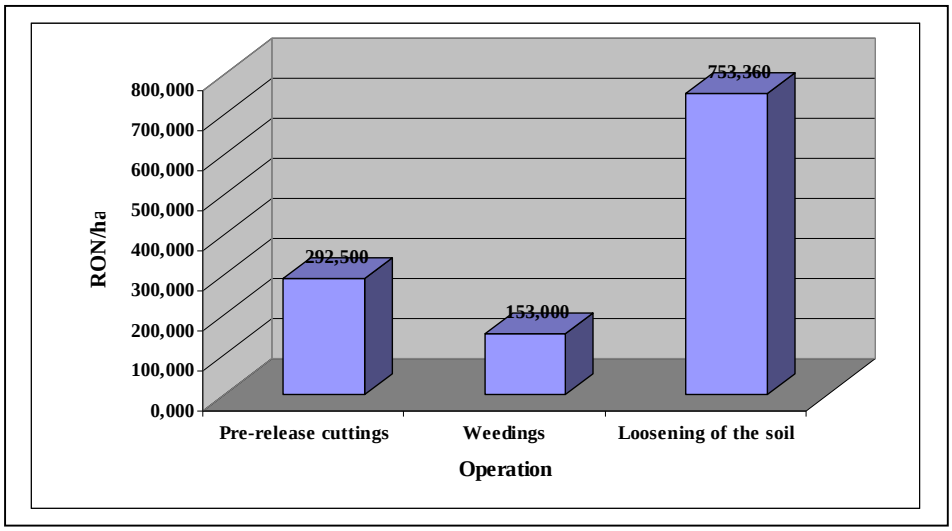


Figure 6: Comparative presentation of the operations proposed by unit price

Loosening of the soil is generally necessary to achieve the seedbearers of oak species, to facilitate incorporation of acorns in the soil and to ensure that appropriate conditions for regeneration of sessile-oak vegetation installed.

Therefore, it is imperative need of mobilizing soil if we want to maintain in the composition of future stands of sessile-oak species in a high percentage, thus obtaining mixed beech and sessile-oak for a high cultural value.

CONCLUSIONS

Studied forest stands, depending on the composition of the basal area are almost pure beech stand - 9Fa1Go, with sessile-oak species to limit their share (Go = 10%).

Maintenance operations proposed for the regeneration process of installation has multiple objectives, besides providing favorable conditions for the installation and development of natural seedlings track and an appropriate proportion of the main species, respectively beech and sessile-oak.

Comparative analysis of costs of operations proposed for maintenance of natural regeneration of forest stands studied is observed that the mobilization of soil is the most expensive work, is essential for the successful promotion of sessile-oak species.

Although the maternal stand is currently at least 70% of plots studied area, was made only partially cut the opening group shelterwood system is necessary bio-groups of seedling be conducted properly installed in order to achieve the close crope in a relatively short time, capitalizing integral fructification main species will be promoted in future stands.

Analyzing the actual situation in the field is apparent that a number of opening group shelterwood system regeneration were installed in accidental mining products, something which should be considered in the future, to ensure proper accessibility of forest stands.

The high costs of improvement cuttings of natural regeneration should not present an impediment to their timely completion, any delay or deviation from those technologies can cause a series of future stand damage, with implications on the value that cultural and ecosystem stability.

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