POSSIBILITIES IN THE UNDER MASSIVE REGENERATION OF OAK STANDS IN THE MANAGEMENT UNIT I SÎNIOB, SĂCUIENI FOREST DISTRICT, COUNTY FOREST ADMINISTRATION OF BIHOR USING GROWTH TUBES - PRELIMINARY STUDIES

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Abstract

Regeneration stands under massive represents certain modality in-sittu conservation of biodiversity and to promote that local provenience. A major impediment for regeneration under massive it is the fructification at the basically species, providing optimal conditions for the installation of the seedlings and not the least maintenance regenerations until the achievement stage massive. Obtaining of valuable stands, composed of species that correspond to the fundamental natural forest type requires cultivations of forest crops, which are characterized by a series of technical particularities. Beating up works in the natural regeneration represents a means of achieving the target composition of regeneration, the target composition of realizing the close crop and respectively opportunity to reduction period the closure of the massif. These interventions can be done differently, depending on the nature of the species to be promoted in the future that stands and respectively environmental conditions.

Key words: stands regeneration, conservation of biodiversity, fructification, local provenience, basically species, beating up the natural regeneration

INTRODUCTION

Storey bioclimatic FD1 respectively hilly storey of oak and other hardwoods comprises region low hills and the plains and are characterized by common oak, turkey oak, Hungarian oak, sessile oak and other hardwood mixtures.

These forest ecosystems are accentuated declining for decades, a fact proven by the percent of ill trees (crown defoliation, indoor rot, etc..) and abnormal drying of trees in recent decades (Silvologie, 2004).

As a result, a comprehensive ecological restoration is necessary to FD1 fitoclimatic storey ecosystems, taking into account that it is imperative to increase forest fund area and that the protection, conservation and sustainable management of forests (Silvologie, 2004).

The global solutions offered by the current forestry technical rules for an area so vast (eg. fitoclimatic FD1 storey) will be differentiated zonal (Silvologie, 2004), local experience and introducing new technologies that are relevant alternatives, with special characteristics differentiated separately for each geographical zone.

MATERIAL AND METHODS

The case study has been realized in the management unit I Sâniob, Săcuieni Forest District, County Forest Administration Bihor in the stand of the u.a. 40B - Fig.1, which is involved in the process exploitation-regeneration – Tab.1.

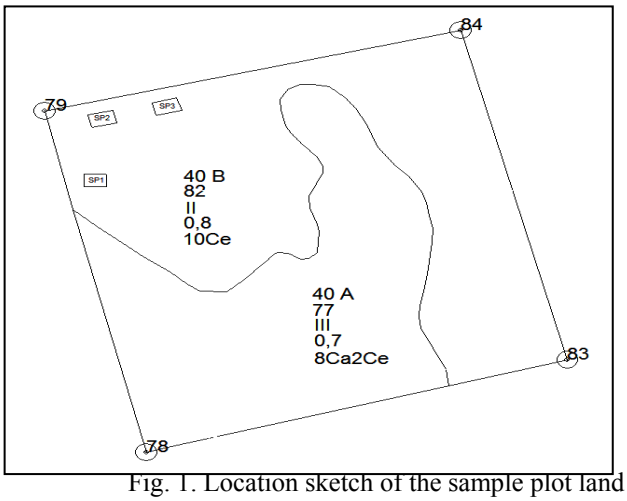


Fig. 1. Location sketch of the sample plot land

Table 1

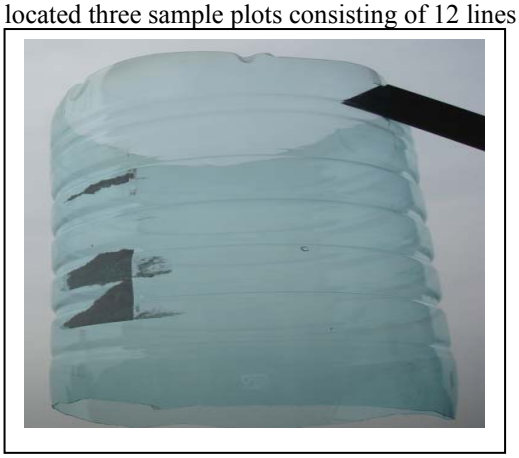
Characteristics stand of the u.a. 40A and 40B (Amenajamentul U.P. I Sîniob,1998)

u.a.	S(ha)	T(years)	CPL	K	Composition	Regeneration mode
0	***1***	***2***	***3***	***4***	***5***	***6***
40A	7.3	77	III	0.7	8CA2Ce	Shoots
40B	10.7	82	II	0.8	10Ce	Shoots

Case study objectives are the possibilities of regeneration in massive acorn germinated (spring up), some stands of oak, that amelioration their composition by increasing the proportion of participation of oak (*Quercus robur L.*) and sessile oak (*Quercus petraea* (Mattuschka) Liebl) species at the detriment of turkey oak (*Quercus cerris L.*).

As a research method we used the observation on the itinerary, observation in stationary, experiment, simulation, modeling, comparison, inventory, recording on digital media.

The experimental device used to realize the case study is located in the stand of the u.a 40 B – Fig. 1 and the shape of a square grid of side 2m – Fig.3. At the intersection of grid sides pits are located centers will be incorporated the acorn into the soil. There were located three sample plots consisting of 12 lines and 9 columns.



a)Growth tube and development made of plastic bottle and 5 l

b)Growth tube placement mode and development in the land

Fig. 2. Growth tubes and development used experimentally

The materials used are represented by the regeneration material - the English oak acorns and respectively growth tubes and protection that were made of plastic bottles from plastically material, which was bottled drinking water.

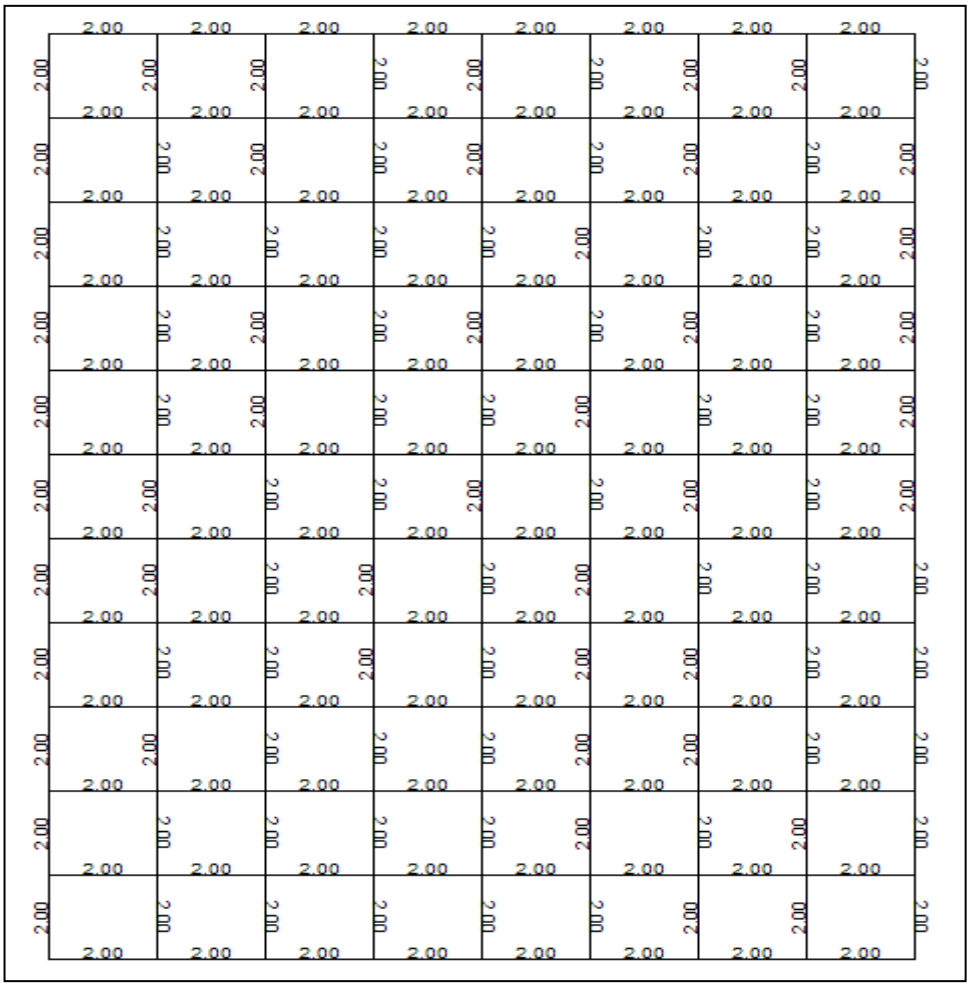


Fig. 3. The experimental device for locating the regeneration material in the stand of u.a. 40B

The upper and lower parts of the plastic bottle that's been removed, resulting in increased practice a cylindrical growth tube, which provides favorable conditions for growth and development and respectively adequate protection plantlets - Fig. 2a, 2b.

The environment created inside the growth tube differs from open land, as a result plantlets have a number of additional advantages compared with plantlets that grow and develop in open land.

The material used for regeneration was also collected from the elite trees related species common oak.

Regeneration material used was originally put to germinated, and incorporation into the soil was achieved after the process of germination was release and even springing

of plantlets. Acorn was incorporated into the soil to a depth of about 5-10 cm, and the acorn planted over was applied growth tube, fixed with adhesive band of two stakes positioned lateral and outside.

Sample plots were placed on the land under wood of the u.a. 40B in portions where it is not regeneration and which in preliminary had been running with works to facilitate the installation of natural regeneration, respectively far-off under wood is very well represented of species common hawthorn (*Crataegus monogyna Jack*), red dogwood (*Cornus sanguinea L. (Thelycrania sanguinea (L)Fourr.))*, tartarian maple (*Acer tataricum L.*), spindle tree (*Euonymus europaeus L.*), warty spindle – tree (*Euonymus verrucosus Scop.*).

The presence of under wood is because proper stand composed of species turkey oak represent has a consistency index k varies within the limits of 0.7 (0.6) - 0.8.

Acorn in the soil was incorporated in May 2010 and the inventory of plantlets was realized in October 2010.

RESULTS AND DISCUSSION

At the end of the vegetation season we have made an inventory of plantlets from planted acorns of common oak in tube growth and development. Were analyzed quantitative aspects respectively the height of plantlets and that quality issues - the state of vegetation and vigor of their growth and development.

Height was measured with a tape divided millimeter, centimeter rounded to the data being recorded. Data collected from the land are presented in Tables 2, 3 and 4.

Regarding the state of vegetation vigor and plantlets development, observations were made on all copies and found that all the plantlets that have spring up normally appear. He noted the presence of fungi of the genus
Erysiphe alphitoides Griff et Maubl., causing mildew the folianeous system to some of the copies examined, without establishing a direct influence of this attack on plantlets analyzed.

Fig. 4. Common oak plantules (*Quercus robur*) with present on the folianeous system showing signs of attack on the *Erysiphe alphitoides*

Table 2

Inventory of the plantules at the end of the first vegetation season in the sample plot no. 1

h(cm)		Column								
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Line	**1**	20	42	33	26	-	44	16	-	34
	2	33	12	28	36	14	-	27	24	33
	3	14	25	25	29(m)	30	16	-	32	34
	4	24	14	30	10	20	-	17	30	32
	5	-	20	34	26	25	13	-	18	37
	6	13	26	33	15	9	21	12	17	33
	7	15	27	29	26	28	27	26	7	19
	8	15	12	23	27	28	30	25	30	33
	9	-	35	26	22	31	13	30	27	27
	10	16	24	31	22	43	35	-	25	34
	11	22	10	36	15	31	36	-	14	30
	12	21	17	13	No	26	20	16	-	-

From analysis of Tab. 2 establishing that the sample plot 1, from a total of 106 acorns incorporated into the soil after the first vegetation season only 95 plantlets spring up and vegetated, and from 11 acorns plantlets hasn't sprang up. It is establish a spring up percentage of about 90%.

Table 3

Inventory of the plantlets at the end of the first vegetation season in the sample plot no. 2

h(cm)		Column								
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Line	**1**	26	No	18	-	40	7	-	-	-
	2	39	13	-	30	45	30	44	-	10
	3	29	19	36	22	26	-	34	-	15
	4	14	30	25	21	46	40	30	-	8
	5	31	28	40	36	22	-	37	-	No
	6	26	20	38	35	-	No	16	No	24
	7	14	33	28	33	27	-	27	12	-
	8	10	27	38	19	7	30	13	27	-
	9	20	43	36	37	31	13	24	-	20
	10	26	28	-	22	-	26	24	25	-
	11	24	25	13	30	24	13	24	34	-
	12	0	0	0	0	0	0	0	0	0

In the sample plot 2, have been inventoried a number of 75 plantlets at the end of the first vegetation season, from a total number of 95 pieces of acorn incorporated in soil – Tab. 3. In this case the percentage of spring up of plantlets is about 79%.

Table 4

Inventory of the plantlets at the end of the first vegetation season in the sample plot no. 3

h(cm)		Column								
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Line	**1**	13	7	-	18	0	0	0	0	0
	2	21	-	17	15	0	0	0	0	0
	3	20	19	6	5	0	0	0	0	0
	4	-	-	-	11	0	0	0	0	0
	5	No	13	20	No	0	0	0	0	0
	6	20	13	24	13	0	0	0	0	0
	7	-	16	12	20	0	0	0	0	0
	8	23	14	12	22	0	0	0	0	0
	9	-	No	18	-	0	0	0	0	0
	10	13	9	8	9	0	0	0	0	0
	11	18	15	-	-	0	0	0	0	0
	12	-	-	24	25	0	0	0	0	0

In the sample plot 3 was a total inventory of 33 plantlets at the end of vegetation season, the number 45 acorns being incorporated into the soil. It notes that 12 acorns not germinate. As a result, the percentage of spring up of plantlets in the sample plot 3 is 73%.

c) d)

Fig. 5. Plantlets of common oak species (*Quercus robur*) obtained in growth tubes and development at the end of vegetation season

The images above figures are the species common oak plantlets grown in growth tubes and development at the end of the first vegetation season. Analyzing the images in Fig. 5 will observed clearly the difference in height between plantlets.

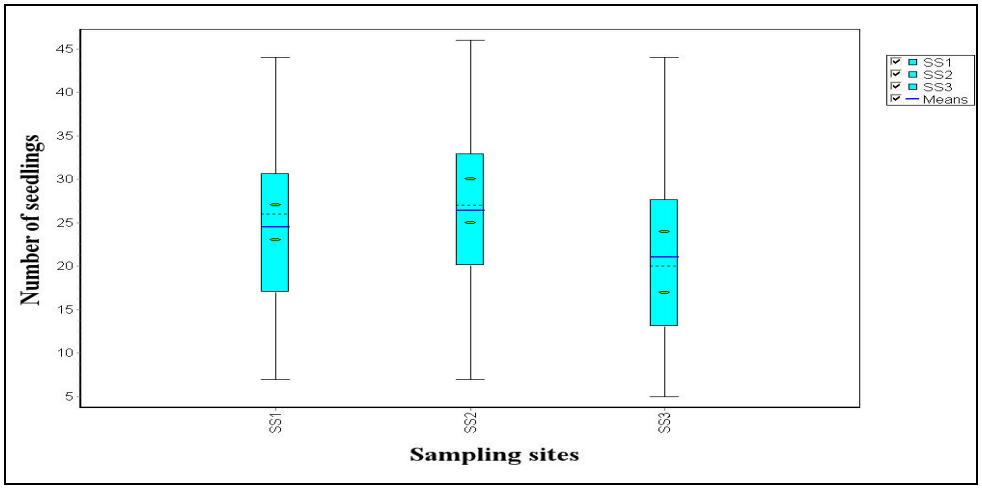


Fig. 6. Box-Plot representation of descriptive statistics (means, medians, confidence intervals of medians, minimum and maximum values) applied to seedlings' heights classes of *Quercus robur*, vegetating in three experimental plots at u.a. 40B

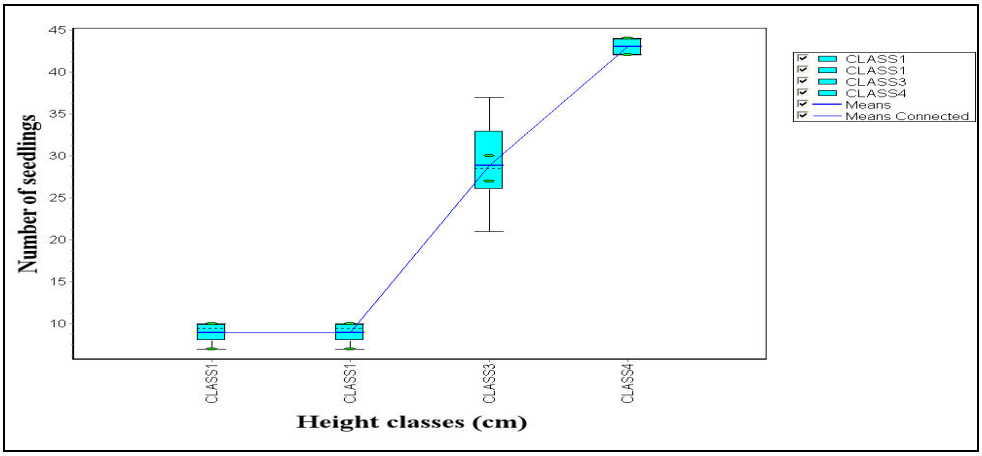


Fig.7. Box-Plot representation of descriptive statistics (means, medians, confidence intervals of medians, minimum and maximum values) applied to seedlings' heights of *Quercus robur*, from sampling sites 1, at u.a. 40B

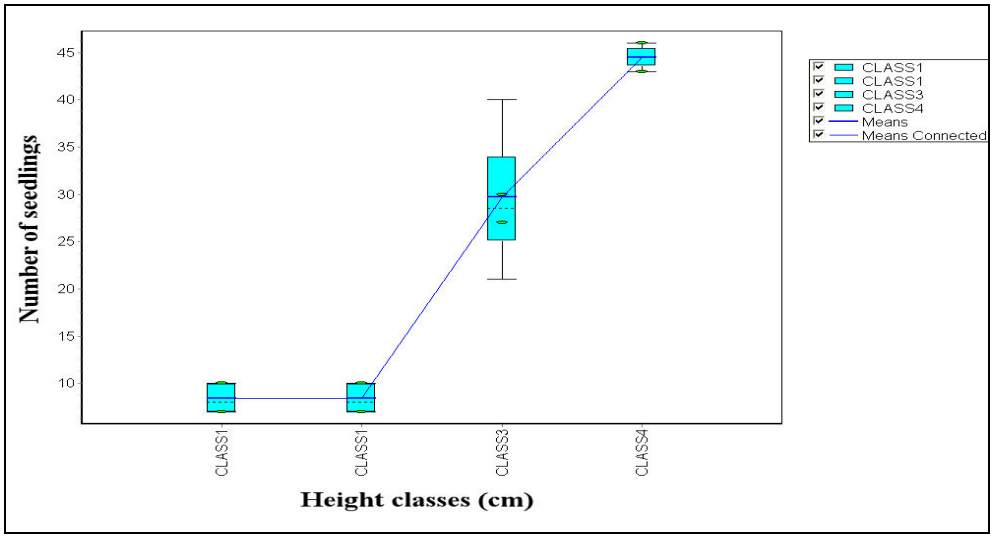


Fig. 8. Box-Plot representation of descriptive statistics (means, medians, confidence intervals of medians, minimum and maximum values) applied to seedlings' heights of *Quercus robur*, from sampling sites 2, at Sâniob

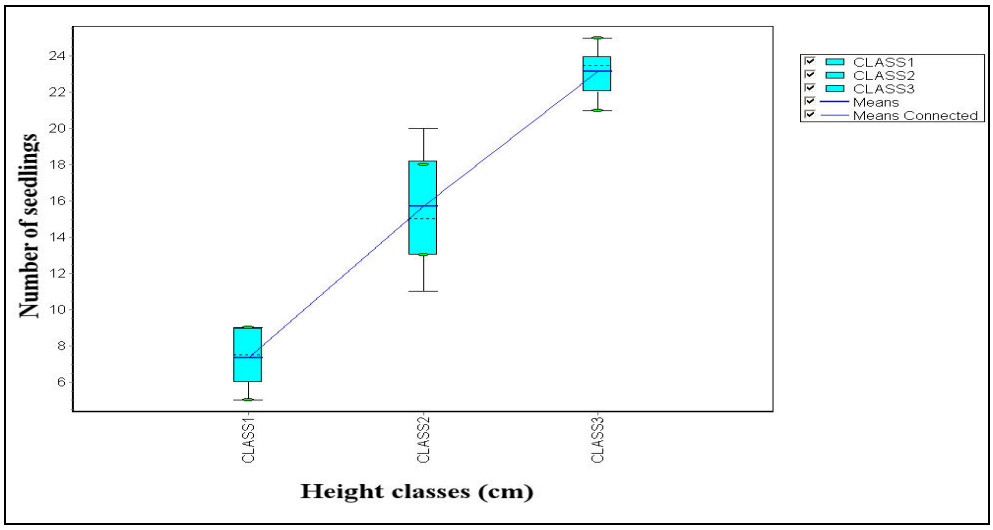


Fig. 9. Box-Plot representation of descriptive statistics (means, medians, confidence intervals of medians, minimum and maximum values) applied to seedlings' heights of *Quercus robur*, from sampling sites 3, at u.a. 40B

The Box-Plot's analysis in Fig. 6 it is observed that the mean height of plantules are highest for SP2, followed by SP1 and SP3 final.

For sample plots No. 1 and 2 were established four classes of plantules height, the highest limit of variation being constated in class III find - the height - Fig.7, 8.

In the sample plot No. 3 were established three classes of height for plantules analyzed, the highest limit of the height variation is the class II - Fig.9.

CONCLUSIONS

Achieve stands of oak regenerated under massive and respectively promovation of valuable species of common oak in the composition of regeneration is an objective of the current date in the practical activities in the forestry sector, for FD1 fitoclimatic storey.

Promoting common oak in the stands of turkey oak, by planting germinated acorns and/or being in process of spring up and respectively utilization growth tube and development represent a possibility of management of the respectively crops, appropriate technical conditions, with better efficiency.

Given that we are at the end of the first vegetation season plantlets, a series of conclusions concerning the practical aspects relating to technology based on the use of growth tube and development regeneration under the massive common oak are not sufficiently well founded.

It noted that inside growth tubes were not reported the presence of herbaceous vegetation.

The health of the plantlets at the end of the first vegetation season is normal and active vegetation state, aspects and is due largely to very favorable vegetation conditions during the vegetation season.

To further promote the use of growth tube based technology and development and next vegetation season is necessary placement of the growth tube segments in each plantlet, according to the height achieved, in October of 2010, for copies promoted to benefit from the protection offered by them during the winter and next spring.

As the case study is experimental, it is recommended periodic monitoring of the plantlets from the experimental system in the stand of u.a. 40B and extends the study to other species that corresponds fundamental natural type of forest, especially sessile oak.

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