

Studies on forest management in Production Unit III Prunisor

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Abstract

Forests, land for afforestation, land serving the needs of cultivation, production, etc., constituted in P.U. III Prunisor, within the O.S. Simian, D.S. Mehedinti, are national forestry fund public property of the State. They are in the municipalities of Tamna, Prunisor, Husnicioara and Malovat in Mehedinti County. Geographically speaking, the forests within the Prunisor P.U. III are located at the interface between the northern part of the Balacitei Piedmont and the southern part of the Cosustei Hills of the Motrului Piedmont.

Key words: Production Unit, composition, consistency, forest floor, age classes

Introduction

On the territory of U.P.III Prunisor, there is forest land that belongs to other owners and is made up of forest areas handed over based on land ownership laws following the reconstitution of property rights [1, 3,4,6].

Thus, during the application of the expired planning, 204.40 ha were handed over according to the land laws. It should be noted that prior to the entry into force of the expired land use plan, 1691.19 ha were surrendered under the land laws [2,4,5, 7,8].

The management of privately owned forests is done by their owners, according to the current legislation in force, in compliance with the forestry regime or through authorized forestry offices [5,6].

On the territory of U.P.III Prunisor, according to the information in the expired planning, there are about 22.3 ha of land covered with forest vegetation located outside the forest fund, as follows:

- 15.0 ha wooded pasture.
- 5.0 ha consisting of isolated pastures.
- 2.3 ha forest vegetation in the form of alignments.

During the implementation of the management plan, the forestry office will identify and register other forest land within the territorial boundary of the forestry office, which will be managed by the legal owners and managed according to technical rules issued by the central public authority [2,4,6].

Material and method

The state-owned forestry fund in the U.P.III Prunisor consists of 82 parcels numbered as follows: 6, 10, 14-15, 19-35, 38, 40, 46, 57, 60-65, 70-76, 79-89, 91-92, 99-101, 117-118, 120-122, 125-129, 131, 145, 146, 149, 154, 156-158, 178-179, 181, 194, 215, 238-241 [3,4,5].

The demarcation and materialisation of the plot was carried out by the field staff of the forestry office and corresponds to the technical requirements imposed by the technical rules in force [6,7].

The subplot has undergone changes due to the work carried out between the two developments and the in-depth analysis of the stands based on medium-scale seasonal maps [8,9].

The delineation and materialization of the subplot was carried out by the designer in compliance with current regulations. The alphabetical designations of the old sub-parcel have been preserved as far as possible, the new sub-parcels receiving the following alphabetical designations [6,8].

Table 1. The average, minimum and maximum size of plots and subplots

Year of installation	Parcels					Subpart		
	No.	Area (ha)			No.	Area (ha)		
		average	maximum	minimum		average	maximum	minimum
		compartment.	compartment.	compartment.		compartment.	compartment.	

1990	274	10,3	78,8	0,3	789	3,6	24,1	0,2
			124	19			101A	14D
2000	119	15,4	78,8	0,3	470	3,9	26,0	0,1
			124	19			31A	129A
2010	95	10,79	48,27	0,2	396	2,59	22,97	0,08
			34	129			26B	156N
2020	82	9,93	48,27	0,23	297	2,74	22,52	0,06
			34	145			26B	38P

With regard to the maximum plot size (20.0 ha) and the minimum sub-plot size (0.5 ha), it is noted that these limits could not be respected exactly due to the terrain conditions, which are characteristic for each case, and to the preservation of the delimitation of the plot and sub-plot of the old planning as far as possible [9,10]

Results and discussions

The nature of the ownership of the forests in this production unit, at the level of 1948, when, by the act of nationalization, all the forests became state property, is as follows:

- Manorial forests - 31%.
- Peasant forests - 69%.

The management of the forests within U.P.III Prunisor is in direct relation with the structure of the owners. Thus, peasant and estate forests were managed according to the "custom of the land". With the advent of the Forestry Code of 1881, the Forestry Code of 1910, the Law on the Protection of Degraded Land and the Forest Protection Law of 1935, most forests were managed either on the basis of logging regulations or based on plans drawn up for this purpose [3,5,7].

According to the data taken from the expired planning and from the general study by forest estate, until the first unitary planning was drawn up in 1954, private forests (peasant and estate) were treated in the groves, by "selective" extraction for timber, without any special concern for cultivation works.

As for care cuts, they were applied sporadically and were not a permanent concern.

For the forests in this territory, the first unitary planning was drawn up in 1954, followed by the redevelopments in 1969, 1980, 1990, 2000, 2010 and 2020 [4,6,8].

At the level of each stage of development, the constitution of the production unit is as follows:

Table 2. The constitution of the production unit

U.P. to the developments of the year ...													
1954		1969		1980		1990		2000		2010		2020	
No.	Name	No.	Name	No.	Name	No.	Name	No.	Name	No.	Name	No.	Name
III	Prunisor	III	Prunisor	III	Prunisor	III	Prunisor	III	Prunisor	III	Prunisor	III	Prunisor
		P.C.	Tâmna	P.C.	Tâmna								
		P.C.	Prunisor	P.C.	Prunisor								
		P.C.	Husnicioara	P.C.	Husnicioara								
		I.A.S.	Tâmna	I.A.S.	Tâmna								
		I.A.S.	Prunisor	I.A.S.	Prunisor								

It should be noted that under H.C.M. 2315/1954, the so-called communal forests were established, which later, under Decree 328/1986, passed into the administration of the Ministry of Forestry. These are parcels of the P.C. Tâmna, parcels of the I.A.S. Tâmna, parcels of the P.C. Prunisor, parcels of the I.A.S. Prunisor and parcels of the P.C. Husnicioara [3,4,9].

The regulation of the timber production process during the planning stages is as follows:

Table 3. The regulation of the timber production process during the planning stages

Year of	Production/protection sub-unit	Exploitable shrubs	Pre-exploitable stands			Harvesting indices	

arrangement		Surface area - ha -	Volume - thousands m ³ -	Surface area - ha -	Volume - thousands m ³ -	Indicator growth rates m ³ /year/ha ³	The possibility m ³ /year ³	m ³ /year/ha ³	Current growth indices m ³ /year/ha ³
1969	conversion	*	*	*	*	*	*	*	*
	grove, acacia	*	*	*	*	-	*	*	*
	TOTAL					-	356	1,3	4,1
1980	conversion	*	*	*	*	*	360	0,2	5,4
	refurbishment	*	*	*	*	-	910	0,5	4,5
	grove, acacia	*	*	*	*	-	2050	2,2	4,2
	grove, acacia (P.C.)	*	*	*	*	-	680	0,4	4,1
	TOTAL	259,8	30,6	384,1	52,3	-	4000	1,4	5,2
1990	conversion	39,3	7,0	301,3	48,2	2,2	410	0,1	5,8
	grove, acacia	108,5	9,0	230,6	10,6	-	1220	0,4	5,7
	TOTAL	147,8	16,0	531,9	58,8	-	1630	0,6	5,8
2000	regular cod, we sort. regular	81,0	14,5	391,4	79,8	5,4	473	0,3	5,4
	plain grove, acacia	70,8	7,6	58,2	4,1	-	570	3,9	4,9
	TOTAL	151,8	22,1	449,6	83,9	-	1043	0,6	5,3
2010	regular cod, we sort. regular	93,42	16,1	343,80	63,5	2,3	210	0,24	4,8
	plain grove, acacia	75,97	5,7	25,71	1,2	-	422	3,61	4,8
	TOTAL	77,92	6,3	369,51	64,7	-	632	0,6	4,7
2020	regular cod, we sort. regular	133,96	27,9	342,60	75,0	2,4	490	0,7	4,5
	plain grove, acacia	60,42	5,5	10,80	0,6	-	307	3,7	3,1
	TOTAL	194,38	33,4	353,4	75,6	-	797	1,0	4,3

* - no data

The way in which the wood production process is regulated results from the analysis of the data in the table above and is appropriate to the management measures adopted:

- conversion from grove to grove.
- applying treatments that ensure the regeneration of stands from seed.
- replanting poorly productive stands and replacing those with unsuitable compositions.
- application of tree care and management works, etc.

For the period 2001-2010, the following clarifications are made about the development bases:

- the coppice regime still adopted for oak, beech, various coniferous trees and the grove regime for acacia and various broad-leaved trees are appropriate to the management goal and the biological characteristics of the species.

- the treatments provided were in relation to the condition and structure of stands, forest formations, etc.

How these provisions have been applied (according to data provided by the forestry office) presented in figures (average annual quantities) and percentages is shown in the following table:

An analysis of the data in the above table shows the following:

- The planning provisions have been implemented in a differentiated manner as follows:
- Regeneration felling was below both area (22%) and volume (32%).

The results of the care cuts (cleaning and trimming) on both surface and volume are as follows:

- The cleaning was carried out below the planned level (17% by area and 67% by volume), which was justified by the careful monitoring of the development of the consistency of the stands affected during this period by the drying phenomenon (the trees with a consistency of 0.8 that were affected by the abnormal drying phenomenon during the period were not covered) [11,14].

- The grading was 68% of the level of the area and 106% by volume.

Table 4. Provisions applied and average annual quantities

The year of working plan	Provisions (P)	Afforestation	Reforestation	Cleaning		Grating		Accidental cuts I		Accidental cuts II		Products main		Conservation cuts		Cuts of hygiene		Harvesting indices m/year/ha ³	Current growth indices m/year/ha ³
	Achievements (R)	ha/year	ha/year	ha/year	m/year ³	ha/year	m/year ³	ha/year	m/year ³	ha/year	m/year ³	ha/year	m/year ³	ha/year	m/year ³	ha/year	m/year ³		
2010	P	27,11	0,65	2,67	6	16,32	228	-	-	-	-	7,79	632	2,36	210	65,47	547	1,6	4,7
	R	12,24	-	0,48	4	11,05	242	22,77	243	10,19	88	1,70	204	-	-	40,76	243	1,01	
	%	45	-	17	67	68	106	-	-	-	-	22	32	-	-	62	44	63	

Table 5. The evolution of age classes for the productive fund

Year of installation	U.P. area (ha)	Age group							TOTAL
		I	II	III	IV	V	VI	VII >	
2010	1025,22	72,16	197,63	272,55	398,21	44,11	1,89	1,46	988,01
	%	7	20	28	40	5	-	-	100
2020	813,91	34,19	82,28	118,68	417,00	113,11	4,21	-	769,47
	%	4	11	15	54	15	1	-	100

All stands affected by the abnormal drying phenomenon, regardless of whether they were crossed with care cuts, were crossed with care cuts. The achievements are in correlation with the evolution of this phenomenon.

Afforestation work (45% of which was carried out) aimed to afforest all the empty areas in the forest and to fill in the gaps in the natural regeneration resulting from the application of regeneration treatments under the forest [12,13].

The evolution of the composition of the stands in Prunisor P.U. III throughout the development stages is as follows:

Table 6. Composition of the stands in P.U. III Prunisor

The year of arrangement	Surface area U.P. (ha)	Species (%)										
		ECG	G	OS	CA	FA	PL	TD	DT	DM	Total	
1969	2795,2	20	30	26	14	-	-	-	-	7	3	100
1980	2809,9	23	25	27	16	-	-	-	-	8	1	100
1990	2788,1	22	24	24	17	3	2	1	-	5	1	100
2000	1831,9	27	25	25	10	3	2	1	1	5	1	100
2010	1025,22	24	22	24	14	4	3	2	1	5	1	100
2020	813,91	27	16	27	13	4	4	2	-	6	1	100

Therefore, the management bases established in the previous management have also found their place in the current one, from where it can be said that they were well chosen and will continue to constitute a framework for directing the forest floor towards the normal structure [10,11].

Table 7. Evolution of production classes

Year of installation	Surface U.P. (ha)	Production classes				
		I	II	III	IV	V
2000	1831,9	4,2	186,3	1219,6	375,8	37,8
2010	1025,22	2,11	43,42	634,91	274,28	33,29
2020	813,91	-	33,08	546,09	160,18	68,26

Forest management during the expired period, carried out in accordance with the provisions of the plans and according to the technical rules in force, has led to changes in the structure of the forest floor in the direction pursued by the proposed goals [15].

Table 8. Evolution of stand density

Year arrangement	U.P. area (ha)	Stand density		
		< 0,4	0,4 - 0,6	> 0,6
2000	1831,9	19,7	63,5	1740,5
2010	1025,22	11,14	44,08	932,79
2020	813,91	-	19,39	788,22

Due to the changes in the establishment of the production unit at different stages of planning (removals from the forest fund on the basis of orders and decrees, establishment of communal forests - H.C.M. 2315/1954 - their return to the state forest fund - Decree 328/1986 - transfer to former owners of some forest areas - Law 18/1991, Law 1/2000 and Law 247/2005), it was not possible to fully implement the provisions of the planning and keep a clear record of the works carried out. The information provided by management as well as harvesting, care and afforestation plans, formed the basis for the development of the annual and decennial strategies by the forestry board [12,21].

Conclusions

The data from the tables show the quantitative achievements in relation to the planning provisions. The achievements are close to the planning provisions but do not overlap with them [1,4,9].

The possibility of main products differs from one stage of development to another, due to the structure of the stands, the size of the production background, the technical and economic objectives considered, but also due to changes in the production unit [14,15,16].

The selection of stands from which to harvest the possibility of main products was made in relation to accessibility and regeneration urgency.

In the current management, an attempt has been made as far as possible to eliminate the negative aspects reported in the previous management, and it is planned to adopt solutions in accordance with the technical standards in force to ensure sustainable forest management [9,10].

The field data collection was carried out in accordance with the guidelines and technical rules in force, developed in 1986-1988, considering the provisions of Law 2/1987 as amended in 1990.

Parcel descriptions were carried out with seasonal maps, describing in detail the station, soil types and subtypes, and the stand [10,11].

The type of resort was determined according to the relief conditions, lithological substrate, soil type, climatic conditions, type of flora [11].

The fundamental forest type was determined according to the systematics of forest types, and its actual character was also established [11,12].

The determination of the taxonomic elements of the stands was done by measurements in sample squares, representative of the development units, so that the determined values characterize the respective stand.

For the determination and description of soil types and subtypes, 8 main soil profiles (1 profile per 101.74 ha) were carried out and analysed in the following land use units: 10, 20A, 27D, 30, 40A, 70A, 99 and 120A [12,13].

The main soil profiles were representatively located within the production unit so that conclusions could be drawn about the interdependence between the respective soil type, lithological substrate, geomorphology, vegetation.

In the U.P. III Prunisor, the profiles are distributed as follows:

- 4 profiles in medium productivity natural fundamental stands: 20A, 70A, 99 and 120A.
- 2 profile in fundamental natural stands of lower productivity: 30 and 40A.
- 2 profiles in artificial stands of lower productivity: 10 and 27D.

From the most representative soil profiles, samples were taken to determine the physico-chemical characteristics of the respective soil types, which were analysed at the soil laboratory of I.N.C.D.S. "Marin Dracea" Station Brasov. In this respect, 2 soil profiles (Compartment 30 and 40A) were analysed and the results were recorded in the analysis bulletins [14, 15, 16].

The data obtained were used to describe the soil type and subtype within the given station and the values of the respective parameters were used to prepare the ecological records of the species in the study area [18].

The information collected for both the station and the vegetation has been coded in the parcel description sheets according to the alphanumeric system, which uses the symbols and abbreviations used (version III), a system that allows the extensibility of the codes and the avoidance of errors [13,20].

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