

WHAT INFORMATION COULD THE VOLUME ESTIMATION DOCUMENTS PROVIDE IN THE CASE OF BĂILE HERCULANE FOREST DISTRICT?

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Abstract

In Romania, the timber harvesting is done in accordance with Law. no 46/2008 and Ministerial Order no. 1540/2011, the Volume Estimation Document (VED) being the main official document that is providing relevant information regarding the forest stand that will be harvested. Since 2017, the managers of the public-owned forests are obliged to publish on their websites the VEDs together with the geographic coordinates of the harvesting sites. In 2018, on the website of the National Forest Administration ROMSILVA, 102 VEDs were published in the case of Băile Herculane forest district (Caraș-Severin Forestry Directorate). The main aim of this study was to analyse the information provided by the 102 VEDs as regards the evaluated quantities of the dimensional wood assortments. Data for seventeen species (fifteen autochthonous and two allochthonous) were analyzed, common beech being the main tree species. Out of the total evaluated quantity, more than a half was designated as firewood.

Keywords: Băile Herculane, Romsilva, timber harvesting, Volume Estimation Document.

1. INTRODUCTION

From ancient times until now, the forests of Romania have experienced a considerable reduction of the area. The current forest fund of Romania has an area of 6.559 thousand hectares (NIS, 2016), representing 27.5% of the country's surface, being below the European average of 32%.

The structure of the forest fund by type of ownership at the end of 2015 was as follows: 48.8% - state public property, 33.8% - private property of individuals, 16.0% - public property of administrative territorial units, 1.4% - private property of administrative territorial units (MEWF, 2016).

The management of the forest fund is done both by state-owned and private-owned forest districts. The biggest administrator is National Forest Administration ROMSILVA, that is managing up to 66% of the national forest fund. At the end of 2015, a total of 471 forest districts were recorded in Romania, out of which 321 were state-owned (territorial branches of Romsilva), 145 were private-owned (out of which 104 are members of Association of Private Administrations from Romania – AAP), 4 were (also) state-owned being under the administration of “Marin Drăcea” National Institute of Research and Development in Forestry and 1 was (also) state-owned, managing the forests from the fields included in the state patrimony (MEWF, 2016).

The distribution of Romanian forests is not uniform, almost two thirds (59.7%) being located in mountainous region, followed by the ones located in hilly areas (33.8%) and the ones from plain regions (6.5%) (MEWF, 2016).

At county level, a big difference as regards the forest area exists, the ratio between the county with the highest area of forests (*i.e.* Suceava) and the county with the lowest area, except București (*i.e.* Călărași) being 20:1 (Figure 1).

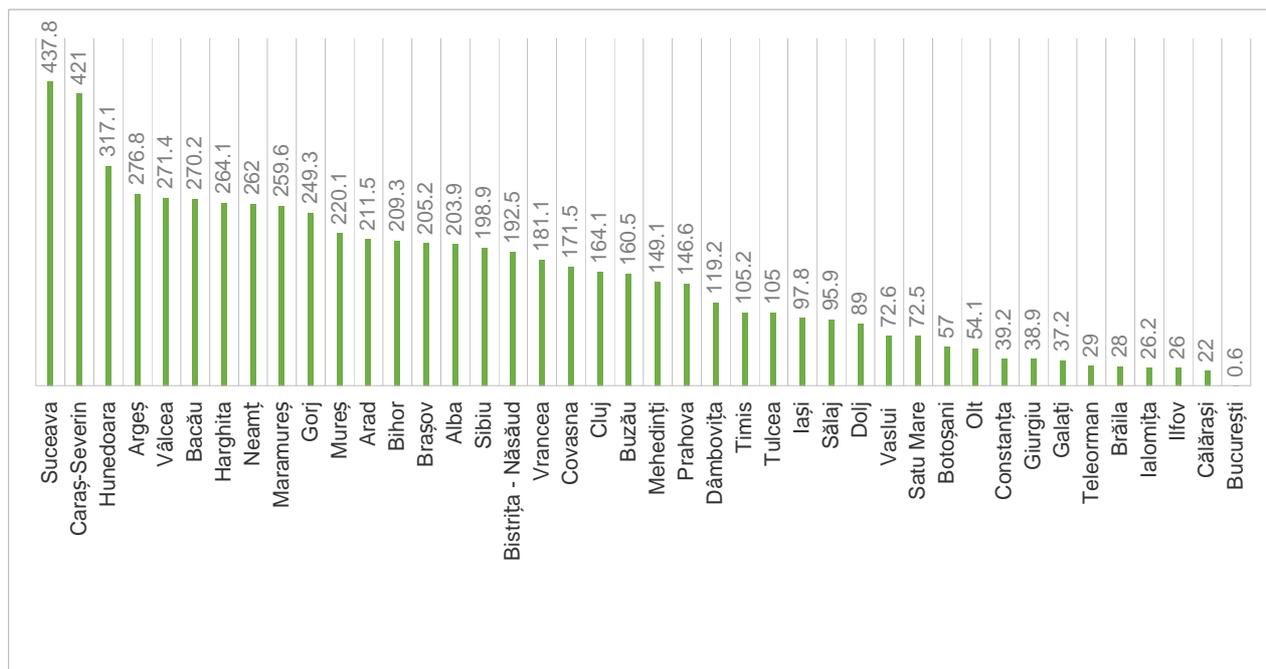


Figure 1. Distribution of the forests at county level

The most common forest tree species is the common beech (*Fagus sylvatica* L.) (31.51%), followed by Norway spruce [*Picea abies* (L.) H. Karst] (19.95%) and the oaks (genus *Quercus* L.) (16.72%) (MEWF, 2016).

The harvesting process in Romania is regulated by the Law no. 46/2008 (Forest Code), and the specific information and guidance is provided by the technical norms and by Ministerial Order 1540/2011 for the approval of the instructions on the terms, modalities and periods of collecting, removing and transporting timber.

The quantity of timber that is the subject of harvesting is included in the so called Volume Estimation Documents (VEDs; *ro.* Acte de Punere în Valoare, *abbrv.* APV), that are approved by the forest districts. Due to Government Decision no. 715/2017 for the approval of the Regulation for the utilization of the wood from the public property forest fund, that is the case of 66% of the forests, these VEDs are available on the websites of the forest managers. For example, in the case of ROMSILVA, the VEDs are publically available on its website at the section *Publicity* (NFA, 2018a).

Timber harvesting is done in most of the cases by more than 3.500 harvesting companies, out of them around 100 having a harvesting capacity of more than 25.000 cubic meters/year (Tobescu, 2017).

In the last years, according to the official data provided by the National Institute of Statistics, in Romania, around 17 million cubic meters were harvested, higher values (25 million cubic meters, on average) being recorded between 1950-1990, while the lowest volumes were recorded in 1992-1993 (Nichiforel, 2017).

The aim of this study was to analyze the VEDs for the production year 2018 in the case of Băile Herculane forest district.

2. MATERIALS AND METHODS

Băile Herculane forest district is one of the seventeen units of Caraș-Severin Forestry Directorate (a territorial branch of Romsilva), that is managing an area of more than 29.000 hectares of state-owned forests (NFA, 2018b). The forest district is based in Băile Herculane, Caraș-Severin County. The total area of the forests at county level is 421 thousands hectares, representing 49.4% of the total area of the county (NIS, 2016).

102 VEDs available on Romsilva's website at the section Publicity - Wood catalogue for the production year 2018 were analyzed. Every VED provides the name of the parcel(s) in which an inventory of the trees to be harvested was done, the type of harvesting process, the area of the stand, the average age of the trees, the average diameters and heights a.s.o. Most important, from a commercial perspective, the VED is giving an estimation of the volume for each species/group of species that would be harvested, for different dimensional wood assortments. The dimensional limits for each wood assortment is given by the Ministerial Order no. 1323/2015 (Table 1).

Table 1. Dimensional wood assortments

Dimensional wood assortments	Diameter at the thin top [cm]	
	Softwood	Hardwood
Thick wood (<i>ro.</i> Lemn gros)	over 20	over 24
I (G1)	over 34	over 40
II (G2)	24-34	24-40
III (G3)	20-24	x
Middle wood (<i>ro.</i> Lemn mijlociu)	10-20	12-24
I (M1)	14-20	20-24
II (M2)	10-14	16-20
III (M3)	x	12-16
Thin wood (<i>ro.</i> Lemn subțire, <i>abbrv.</i> LS)	5-10	5-12

According to Ministerial Order no. 1540/2011, these volumes constitute the basis for selling and the timber can be sold either as standing stock (stumpage) or as harvested timber in the primary platform. An example of a VED is given in Figure 2.

OS Baile Herculane

OS Baile Herculane

ACT DE PUNERE IN VALOARE NR. 1224164 - CS - 296

Unitate de Productie : V - IAUNA CRAIOVEI

Denumire A.P.V. : IAUNA MARE

Suprafata totala act - (ha) : 12,20		Tratament : PROGRESIVE - DEFINITIVA		Informatii privind N.T.S.M.				Grupa de specii	Nr. de arbori	Vol. arbore										
Natura produsului : PRINCIPALE CODRU		Tehnologia de exploatare : SORTIMENTE SI MULTIPLI DE		Stancarii pe - (ha) :				Rasinoase FAG Quercinee Diverse tari Diverse moi	368	1299										
Data inventarierii : 04.05.2016		Anul exploatarii : 2018		Arbori putregaiosi - (buc) :																
Procedeele de inventariere : FIR CU FIR		Ciocan rotund nr. : rp 26 225		cu un volum de - (mc) :																
Ciocan patrat nr. : CS-02-02				Iescarii -(buc) :				Total :		368	1299									
Ciocan patrat nr. : CS-02-02				cu un volum de - (mc) :																
Specia	SORTARE DIMENSIONALA							Lemn lucru	Coaja	Lemn de foc		Volum brut								
	G1	G2	G3	M1	M2	M3	LS			Total	VF									
FAG	463	100		10	4	2		579	28	692	56	1299								
TOTAL	463	100		10	4	2		579	28	692	56	1299								
U.A.	Suprafata ha	Varsta ani	Panta G	Semintis utilizabil						Total volum brut										
				%	S. tot	Compozitie			H.											
37	12,20	140,0	31,00	77,87	9,50	10FA			1,50	1299										
Total	12,20			77,87	9,50					1299										
U.A.	FA	Volum																		
37	1299	1299																		
Total	1299	1299																		
U.A.	Specia	Diametre		Inaltimi		Var sta	Vol. arb	Nr. arb	Cres tere	Sortare dimensionala							Coaja	Lemn foc		Volum brut
		dt	deg	ht	he					G1	G2	G3	M1	M2	M3	LS		Total	VF	
37	FA	68,00	67,40	29,00	28,90	140	3,53	368		463	100		10	4	2		28	692	56	1299
Total U.A. : 37										463	100		10	4	2		28	692	56	1299
Total General U.A. :										463	100		10	4	2		28	692	56	1299

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Figure 2. An example of a Volume Estimation Document

3. RESULTS AND DISCUSSIONS

By centralizing the data from the 102 VEDs, it resulted that the total area of the forest stands that would be harvested is 1540.51 hectares, that is around 5% of the total area managed by Băile Herculane forest district.

The total estimated raw wood volume was 60.060 cubic meters, out of which 86% was recorded for common beech (Table 2).

Table 2. The total estimated wood volume

Dimensional wood assortments	Species																	TOTAL
	Abies alba (AA)	Carpinus betulus (CP)	Quercus cerris (QC)	Pseudotsuga menziesii (PM)	Fagus sylvatica (FS)	Fraxinus excelsior (FE)	Quercus frainetto (QF)	Quercus petraea (QP)	Acer campestre (AC)	Betula pendula (BP)	Picea abies (PA)	Acer pseudoplatanus (AP)	Populus tremula (PT)	Robinia pseudoacacia (RP)	Salix caprea (SC)	Tilia spp. (TS)	Ulmus glabra (UG)	
G1	64	3	7	167	12323	1	0	112	0	0	12	14	196	0	0	51	3	12953
G2	47	13	4	299	5846	12	1	179	0	20	78	25	1107	1	4	105	18	7759
G3	17	0	0	148	0	0	0	0	0	0	48	0	0	0	0	0	0	213
M1	20	5	0	197	1258	5	1	32	0	15	75	5	359	0	2	29	5	2008
M2	7	9	0	108	1324	8	3	22	0	12	29	4	233	0	4	23	3	1789
M3	0	15	0	33	1160	5	1	9	0	10	0	4	113	0	5	13	1	1369
LS	3	21	0	35	877	2	0	4	1	9	10	2	32	0	6	10	4	1016
Wood*	158	66	11	987	22788	33	6	358	1	66	252	54	2040	1	21	231	34	27107
Bark	17	6	2	165	1259	6	1	54	0	13	28	4	283	0	2	50	5	1895
Firewood	123	192	18	307	27709	96	25	473	1	96	92	52	1367	2	186	222	97	31058
Total	298	264	31	1459	51756	135	32	885	2	175	372	110	3690	3	209	503	136	60060

*Wood with the diameter at the thin top above 5 cm

On average, the ratio between the wood with the diameter at the thin top above 5 cm and the fire wood was almost one (Figure 3). The share of fire wood was highest in the case of ten out of the seventeen species, the highest values being recorded in the case of *Salix caprea* L. (SC).

As regards the main three species in terms of potential harvesting volumes, namely *Fagus sylvatica* L. (FS), *Populus tremula* L. (PT) and *Pseudotsuga menziesii* (Mirb) Franco (PM), in the case of the latter one the volume of wood was higher than the volume of fire wood (Figure 3).

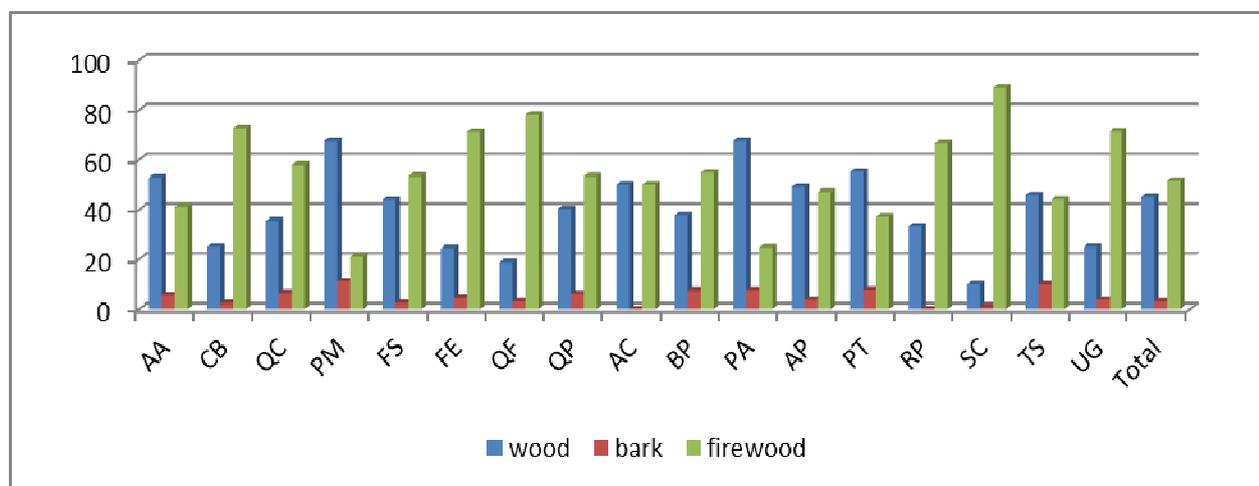


Figure 3. The ration between the wood, bark and fire wood

Approximately one fifth of the potential harvesting volume was included in thick wood class I (*ro. Lemn gros I, abbrv. G1*), most of them being recorded in the case of common beech.

4. CONCLUSIONS

The main tree species that is the subject of harvesting in 2018 by Băile Herculane forest district is the common beech, that provides the highest shares of both fire wood and wood with several uses. Among the seventeen species, two of them were allochthonous, namely the black locust and the Douglas fir. The latter one seems to be the main softwood species of interest in the region since the harvested quantity is more than double in comparison with the total volume of Norway spruce and Silver fir.

The results of this study could represent a useful overview for the harvesting companies, on one hand, and for the forest managers, on another hand. In particular, these kind of centralized data could be used by the harvesting companies in order to have an overview regarding the profile in terms of timber harvesting of a certain forest district.

Last but not least, the publically available VEDs could represent an important source of information for both researches and the general public.

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