ASPECTS REGARDING THE QUANTITY OF SMALL DIMENSION WOOD RESULTED AFTER APPLYING FORESTRY TECHNOLOGIES IN THE CRİŞUL ALB RIVER BASIN

Mihai Larian Brad

1Faculty of Engineering, “Vasile Goldiş” Western University of Arad, Cocolorilor 57, 310426, Arad, Romania

Abstract

Taking into consideration that the small sizes wood started to be interesting from the economic point of view, in a moment when the market for this type of wood expanded, there was the problem of taking into account and prognosis the quantities of small dimensions wood that are yearly exploited by Forestry Directorate Arad (DS Arad). This inventory led to the conclusion that there is in the area a big amount of “bad quality wood”. The purpose of the research was to profound the knowledge of the potential of the small sizes wood in the Arad county, to generate more incomes through the careful management of the forestry units. In this context, the objective regarding the determination of the small wood volume in DS Arad ad more precisely in the Forests Districts (O.S.) from the Crişul Alb River was set.

Keywords: small dimension wood, Crişul Alb River Basin, forest biomass, Gross wood, exploitation technologies

INTRODUCTION

The new meaning of the term “small dimension wood” is strongly related to the term “forest biomass”. You can say that these two terms coincide.

A valid universal definition is the following: "forest biomass" is defined as the secondary product of management, of ecosystem restoration and of the dangerous combustible reduction treatments, including trees and wooden plants (from which branches, tops, needles, thorns, leaves and other wooden parts that grow in the forest, in a woody area or in a forest environment".(USDA)

Shortly, the smallwood is the secondary product of forest exploitation, and part of this wood are the branches, the tops, the thorns, the leaves and other wooden parts. In this paper when we refer to “other wooden parts” we refer to the thin wood and the fire wood.

By thin wood we understand the wood which has the diameter smaller than 6 cm at hardwood and 8 cm la softwood (according to industrial sorting) (Giurgiu et al., 1972).

Another definition is the one concerning: “The utilization of forest biomass” or “Use of smallwood”. The use of small sizes wood is defined as the exploitation, selling, offer, commerce and/or the use of forest biomass”. The result of this use is the production of a large variety of wooden products, including frames, timber, paper and cellulose, furniture and other high value goods, as well as bio energy and/or bio products as plastic, etanol and biodiesel.”(USDA)
THE PURPOSE AND THE OBJECTIVES OF THE RESEARCH

Taking into consideration that the small sizes wood started to be interesting from the economic point of view, in a moment when the market for this type of wood expanded, there was the problem of taking into account and prognosis the quantities of small dimensions wood that are yearly exploited by Forestry Directorate Arad (DS Arad). This inventory led to the conclusion that there is in the area a big amount of "bad quality wood". The purpose of the research was to profound the knowledge of the potential of the small sizes wood in the Arad county, to generate more incomes through the careful management of the forestry units. In this context, the objective regarding the determination of the small wood volume in DS Arad ad more precisely in the Forests Range (O.S.) from the Crişul Alb River was set.

In order to wrap up all the issues, the research was restraint to the level of forests existing in the Crişul Alb River Basin from DS Arad, and for this there were chosen 5 O.S. representing a diversity regarding the species, the geographic categories existent, the age of the species, the nature of the products and the applied exploitation technologies.

The forests of Arad county are covering a surface oh 210.662 ha (31.12.2005), from witch a surface of 126.940ha represents the property of the Romanian State, the rest being owned by private institutions (Fig.1)

METHOD

In order to analyze the way that can be introduced in the economic circuit, there were used a series of research methods like analytical inventories of the quantities of wooden mass existing in the legal acts of the timber exploited (APV) and the analyzing of those, as well as the comparison and the synthesis of the obtained results.

In order to reach the purpose there inventories were done from the data of the legal acts of the timber exploited from the Forest Range (O.S.) in the Crişul Alb River Basin area of the territory of Arad Forestry Directorate in 2006.

The area that was taken into account is compound by 5 Forest Districts. The legal acts of the timber exploited taken into study are those that contain the quantity of wooden volumes sorted industrially.
In order to make this paper, the data was taken from the program de “Fond Forestier” of DS Arad (TOMSOFT – Fond Forestier, v.15.98D), taking into account only the APV’s with an exploitation date the year 2006 (Fig. 2).

The obtained data was processed and then summarized in charts for each forest range, the graphics being realized for a better visualization of the information. The graphics represent the reports regarding the small dimensions wood in relation with the gross volume or the working wood volume.

RESULTS OF THE RESEARCH

Regarding the nature of the ground and the nature of the products that were about to be extracted after the exploitation there were used several exploitation technologies.

These technologies are presented in the table below (Table 1), following closely the quantity of small sizes wood in relation with the quantity of working wood resulted after applying a certain forestry technologies.

After the estimation of the concrete data resulted in this research one can notice the fact that even though the working wood is of a majority, the quantities of small sizes wood are not to be neglected, reaching in present, due to the exploitation from the past and the management of the forest, a percentage of 45.88% from the total volume of exploited wooden mass.

Table 1 The quantity of small sizes wood in relation with the quantity of working wood resulted after applying a certain forestry technologies in different Forest Districts

<table>
<thead>
<tr>
<th>Technology</th>
<th>Surface</th>
<th>G1</th>
<th>G2</th>
<th>G3</th>
<th>M1</th>
<th>M2</th>
<th>M3</th>
<th>Total wood</th>
<th>Total Gross</th>
<th>$</th>
<th>Work</th>
<th>Forest</th>
<th>Earnings</th>
<th>Small dimension wood</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tree sets</td>
<td>3</td>
<td>0</td>
<td>20</td>
<td>0</td>
<td>68</td>
<td>50</td>
<td>10</td>
<td>24</td>
<td>144</td>
<td>55</td>
<td>198</td>
<td>932</td>
<td>125</td>
<td>139</td>
</tr>
<tr>
<td>Wood sets and</td>
<td>703.7</td>
<td>481</td>
<td>336</td>
<td>0</td>
<td>179</td>
<td>332</td>
<td>287</td>
<td>239</td>
<td>2890</td>
<td>245</td>
<td>340</td>
<td>6012</td>
<td>435</td>
<td>688</td>
</tr>
<tr>
<td>multiple wood sets</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rods and logs</td>
<td>5425</td>
<td>190</td>
<td>250</td>
<td>2</td>
<td>378</td>
<td>374</td>
<td>382</td>
<td>359</td>
<td>2422</td>
<td>707</td>
<td>730</td>
<td>2525</td>
<td>606</td>
<td>306</td>
</tr>
<tr>
<td>Wood sets and</td>
<td>1737.7</td>
<td>571</td>
<td>329</td>
<td>21</td>
<td>1526</td>
<td>1130</td>
<td>1102</td>
<td>997</td>
<td>14253</td>
<td>919</td>
<td>2092</td>
<td>6046</td>
<td>1147</td>
<td>896</td>
</tr>
<tr>
<td>multiple wood sets</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tree sets</td>
<td>25.5</td>
<td>177</td>
<td>218</td>
<td>0</td>
<td>75</td>
<td>230</td>
<td>132</td>
<td>265</td>
<td>1536</td>
<td>80</td>
<td>195</td>
<td>818</td>
<td>98</td>
<td>87</td>
</tr>
<tr>
<td>Tree sets</td>
<td>5984.9</td>
<td>1244</td>
<td>1253</td>
<td>136</td>
<td>1334</td>
<td>829</td>
<td>2964</td>
<td>2984</td>
<td>3430</td>
<td>1943</td>
<td>2981</td>
<td>16426</td>
<td>3645</td>
<td>2103</td>
</tr>
<tr>
<td>Tree sets</td>
<td>3840.6</td>
<td>6564</td>
<td>1385</td>
<td>69</td>
<td>2615</td>
<td>1892</td>
<td>1038</td>
<td>2223</td>
<td>42510</td>
<td>769</td>
<td>807</td>
<td>16096</td>
<td>2597</td>
<td>1920</td>
</tr>
<tr>
<td>Tree sets</td>
<td>8651.9</td>
<td>2086</td>
<td>2942</td>
<td>30</td>
<td>1832</td>
<td>1389</td>
<td>680</td>
<td>2221</td>
<td>47726</td>
<td>2725</td>
<td>2725</td>
<td>18414</td>
<td>4002</td>
<td>1018</td>
</tr>
<tr>
<td>Tree sets</td>
<td>1600.7</td>
<td>4066</td>
<td>7714</td>
<td>37</td>
<td>2047</td>
<td>1878</td>
<td>1497</td>
<td>6666</td>
<td>3136</td>
<td>582</td>
<td>2068</td>
<td>11522</td>
<td>285</td>
<td>1454</td>
</tr>
<tr>
<td>Tree sets</td>
<td>5534.6</td>
<td>1340</td>
<td>1152</td>
<td>303</td>
<td>1405</td>
<td>1152</td>
<td>8464</td>
<td>11284</td>
<td>20767</td>
<td>6500</td>
<td>11509</td>
<td>79125</td>
<td>1343</td>
<td>9883</td>
</tr>
</tbody>
</table>

TOTAL 14415.1 93656 46267 300 14960 11152 8464 11284 20767 6500 11509 79125 1343 9883

We can observe a generalization of this phenomenon presenting the graphics with the reports between the quantities of gross wood and small sizes wood in accordance with the exploitation technologies chosen. (Brad, 2009)
Fig. 3 The volume of gross wood and small sizes wood in accordance with the exploitation technologies chosen in 5 Forest Ranges: Chişineu Criş, Ineu, Beliu, Sebiş and Gurahonţ

CONCLUSIONS

After processing the data show that the forested area of the 5 Forest Districts in the Crişul Alb River Basin after timber exploitation, forest biomass has a volume of 95.183 mc. This volume of wooden mass is in a very big loss regarding the capitalization on the wood market.

In the actual context, this possibility of small sizes wood represents a gold mine for the future companies that will be interested to explore this niche. At this moment only one big company from Sebeş processes this category of products resulted from the exploitation.

The introduction of new exploitation technologies and as well of a new generation of forestry equipment for the exploitation of the forests is necessary in order to create a market for this category, the small sizes wood, which proves to become more and more important in the future of the forest exploitation in Romania.

REFERENCE

Giurgiu V et al., (1972) Biometry trees and stands in Romania, Ceres Publishing House, Bucuresti, Romania
USDA, www.forestsandrangelands.gov