

Energy wood stores in undergrowth of forests in Latvia

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INTRODUCTION

Forest resources are the most significant natural asset of the state of Latvia. According to data of the 2nd stage of forest resource monitoring for 2014, Latvia has 3575 thousand hectares of forest land comprising 55.3 percent of the total territory of Latvia, while the total timber stock is estimated at 668 million cubic meters (Bumanis et al., 2014).

However, from the available data on forest resources it is only possible to theoretically and hypothetically state what proportion of these resources would be useful and economically justified as an energy supply. Each forest stand has a certain amount of undergrowth and understorey – small woody plants (shrubs) which have not been researched much until now. A precise determination of the amount of energy wood in Latvian forests would be of great benefit to the Latvian economy.

MATERIAL AND METHODS

Research data were collected in forests at the Jelgava Forest District “Forest Research Station”. The research was carried out in two forest subquarters of forest site type *Myrtillosa mel*. Eight circle-shaped sample plots were established. The area of each single plot was 25 m².

In the sample plots, the understorey and undergrowth trees were cut at the root neck. A sample was prepared from each tree harvested which was then sent for drying.

The wood samples were transferred to “Forest and wood products research and development institute Ltd” for moisture determination. Total moisture content of the wood sample was determined according to standard LVS EN ISO 18134-2: 2016.

RESULTS

In the forest subquarter with a stand composition of 10Pine (66 years old) the sum biomass of undergrowth and understorey was 177.91 kg per sample plot. In the forest subquarter with a stand composition of 9Pine1Birch (88 years old) there was a total understorey tree mass of 180.9 kg but 16.17 kg of undergrowth per plot. This means there was more biomass in understorey than undergrowth in the site investigated.

DISCUSSION

When the tree stand was 10Pine (66 years old) the amount of dry matter to be extracted from all sample plots was 12.37 t ha⁻¹ on average. In the forest subquarter with a stand composition of 9Pine1Birch (88 years old) the amount of dry mass is 10.24 t ha⁻¹ on average.

According to previous research, 7–20 t ha⁻¹ of dry mass was obtained in Sweden, 7 to 12 t ha⁻¹ in Poland, 6 to 14 t ha⁻¹ in Germany and 8 to 12 t ha⁻¹ in Latvia (Lazdina et al., 2010). There are also several researches papers which describe biomass from young hardwood stands on abandoned agricultural land in Canada: the values vary from 0,6 t ha⁻¹ to 82,6 t ha⁻¹ (Lupi et al., 2017). Consequently, a sufficient amount of biomass was obtained in the forest subquarters investigated in our research, which fits with the results of other studies carried out.

CONCLUSION

The volume of potential energy wood in undergrowth and understorey in *Myrtillosa mel* forest site types is significant and it is advisable to use it as a raw material for energy production together with felling residues. However, it is necessary to evaluate the technical and technological capabilities from an economic perspective in each particular case.

KEYWORDS

Energy wood, biomass, undergrowth, *Myrtillosa mel* forest site type