

QUALITY ASSESSMENT OF BIOMASS MIXTURES FROM SEA BUCKTHORN AND FRUIT TREES RESIDUES

Nazar Boris, Marian Grigore, Malai Leonid, Daraduda Nicolae

*Technical University of Moldova, Scientific Laboratory of Solid Biofuels,
Chisinau, Republic of Moldova*

E-mail: nicolae.daraduda@tran.utm.md

Climate change issues and the depletion of fossil fuels have led to an increased interest in renewable and sustainable energy sources. In this context, solid biofuels have become a promising option, while sea buckthorn has emerged as a valuable raw material used in the production of densified solid biofuels (DSBF) meeting the international ENPlus standards.

The aim of this research was to evaluate the quality of biomass mixtures produced using arboricultural residues and those resulting from the sea buckthorn production chain. The research was carried out within the UTM Scientific Laboratory of Solid Biofuels using standard methods of analysis of solid biofuels.

In this study the biomass of sea buckthorn and agricultural residues was collected from different farms located in the Republic of Moldova. Qualitative analysis of the mixtures was carried out in the UTM Scientific Laboratory of Solid Biofuels.

The results are summarised in the table below:

No.	Biomass Type	Q_r , MJ/kg	A, %	V_{ds} %
1	SB 0%+100% AR	17,28	3,09	80,98
2	SB 25%+75% AR	17,31	2,87	79,36
3	SB 50%+50% AR	18,05	2,56	78,02
4	SB 75%+25% AR	18,31	2,05	77,12
5	SB 100%+0% AR	18,31	0,98	79,16

Note: SB - sea buckthorn; AR - arboricultural residues; Q_r - net calorific value at 10% sample moisture; A - ash content; M - moisture content; V_d - volatile content.

The results obtained in this experiment show that the use of arboricultural residues mixed with sea buckthorn residues for the production of pellets and briquettes can be quite effective as it can increase the calorific value and decrease the ash content of the final product. It is sufficient to add 25% of sea buckthorn biomass to the biomass resulting from arboricultural residues for the quality of the solid biofuels produced from this mixture to reach ENplus 3 standards. Thus, it can be concluded that sea buckthorn residues represent an important source of raw material in the formation of mixtures with the prospect of being used for the production of ENplus 3 certified pellets.

Acknowledgements: This study was possible due to the funding provided by the project 20.80009.5107.13 no. 52 PS within the State Programme of the Republic of Moldova.

Keywords: *arboricultural residues, Ash content, briquettes, calorific value, mixtures, Sea Buckthorn.*