A research on Pelletızıng Properties of Vıneyard Resıdues

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The important part of the agricultural residues generated by plant production is a quite valuable biomass supply for renewable energy sources because of their remarkable heat energy content. In Turkey, vineyards are located at agricultural fields in a mass and the pruning residues have an important potential that can be used as a biomass energy source by suitable handling processes. In general, for using the agricultural residues as biomass energy source, raw material must undergo pre-treatment process and is pelletized. Those processes are widely recommended for solving the problems with transportation, storage and usage conditions.

The purpose of the investigation was to determine the pelletizing properties of vineyard pruning residues. The granule size of the residues was reduced by using the hammer mill. Thus, in the pelletizing process, also pomace residues were used because of their positive adhesive properties and high calorific value in addition. Pelletizing experiments were made by the newly developed biomass pelletizing test device in 3 different moisture contents and granule sizes with prepared vineyard pruning and pomace residues mixture ratios as follows 30%-70%, 50%-50% and 70%-30% respectively.

Pellets only formed with 30%-70% mixture ratio. In this ratio, the pellet durability force determined as the highest value, 102,33 N at the conditions of 1 mm granule size and %15 moisture content. In addition, the machine pelletizing force and pellet bulk density determined 5736,33 N and 696,28 kg/m3. The mechanical durability of pellets as 97.77%, met the EnPlus and PFI certificate standards at the same conditions.

Keywords: