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Quality of high biomass sorghum pellet

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High biomass sorghum (*Sorghum bicolor* (L.) Moench) is a crop that presents a great potential as a source of biomass for energy due to its high productivity and because it is a mechanizable crop, being an alternative of biomass to be used in pelletizing densification processes. The objective of the study was to produce pellets of a BRS716 high biomass sorghum hybrid and perform its characterization according to international quality standards for pellets. The biomass sorghum pellets were obtained in a laboratory pelletizer without addition of any additive, with a diameter of 6 mm and varied lengths. They were characterized for their physicochemical and mechanical properties according to the norms established in the literature. The apparent density of the pellets was 658 kg.m⁻³. Mechanical durability was high, above 98%, with 1.64% of fine material (less than 3.15 mm) produced. The pellets showed a fixed carbon content 9.0 %, volatile matter 79.6 %, ash 4.1%, moisture 7.3 %, upper calorific value 17.66 J.g⁻¹, net calorific value 15.27 J.g⁻¹, energy density 10.04 GJ.m⁻³. In the evaluation of energy density, it is observed that the potential of the high biomass sorghum pellets (10.08) was very close to that of pellets of wood (10.28). The elemental composition presented carbon 41.4 %, hydrogen 4.7 %, oxygen 49.1 %, chlorine 0.3%, sulfur 0.06%, potassium 1.2%, nitrogen 0.7%. The pellets of high biomass sorghum variety BRS 716 obtained have the minimum characteristics required by DIN EN 14961-6 and have met all the specifications of the European marketing standard for pellets of non-wood products. These results demonstrate the great potential of biomass sorghum as a crop to be integrated into the biomass supply chain for energy generation.