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Characterization of agricultural residues for energy purposes

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In Costa Rica there is a great variety of agricultural residues that are presenting an environmental problem. Due to this, two of the main residues have been studied: coffee pulp and pineapple stubble for energy purposes. For this purpose, pellets were obtained from them and from a mixture made up in a 50:50 mass ratio of each residue. The study was performed under different values of moisture and particle size for each pellet processing. Unit density and apparent density were determined with values between 1.09 kg/dm^3 to 1.32 kg/dm^3, 555.30 kg/m^3 to 578.23 kg/m^3 respectively. In the case of friability and durability results were found with values ranging from 0.89 to 0.99 and 92.29% to 98.33% respectively values that meet the requirements of the standard. It was determined that the physical properties improved for higher moisture values and lower particle size. In addition, the material used was characterized by finding high contents of sulfur, chlorine and nitrogen in the pineapple stubble that are above that recommended in the standard. The coffee pulp fulfilled all the established in the standard and presented values of lignin superior to the pineapple stubble benefiting the process of pelletizing.

Biography

Pedro Casanova Treto has completed his undergraduate academic formation at the Mechanical Department of the University of Las Villas (UCLV), Cuba and his graduate studies at the Department of Agricultural Engineering of the University of Viçosa, Brazil. His research has taken place in Cuba, Brazil and Costa Rica. Actually, he is working in renewable energy (biomass energy) and new materials from agroforestry residues. He has published several paper in differents scientific journal and books.

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