A FUZZY APPROACH TO THE OPTIMIZATION PROBLEM OF THE ECONOMIC BALANCE ASSOCIATED WITH THE USE OF THE SUGARCANE HARVESTING RESIDUAL

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- ABSTRACT: Brazil is the world's largest producer of sugarcane and this production is concentrated in Center-South region. In the season 2013/14 the sugarcane production was 658.8 million tons, which represent an increase of 11.9% when compared with 2012/13 (588.9 million tons).Despite the fact that the sugarcane is a positive influence to the Brazilian economy, raise environmental concerns related to the sugarcane industry processes. The pre-harvest burning of sugarcane is one of the most sensitive environmental issues faced by cane growers. This practice has been questioned and abolished in some areas. But, with decreasing in the number of burnings, the residue derived from the harvest of sugarcane without prior burning become an important matter for researchers and producers. If left on the soil, it may result in diseases and plagues, compromising the regrowth. On the other hand its removal is very expensive due to the several processes involved (windrowing, compaction, transportation, etc.).Therefore, the researchers and managers are studying an efficient and economical way to use the harvesting residual biomass. The purpose of this work is to develop a mathematical model to help choosing among the available sugarcane varieties in order to maximize the economic balance of transportation and processing of the sugarcane residual biomass, address sucrose production and planting area constraints. The model obtained correspond to Linear Fuzzy Programming 0-1. The results show the viability of the model in selecting sugarcane varieties, which providean optimized economic balance for the process of managing of residual biomass of the sugarcane harvest.
- KEYWORDS: Mathematical model; residual biomass; sugarcane; fuzzy 0-1 linear programming.

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