In this study, performances of 23 sugar plants of Turkish Sugar Plants CO. have been examined for the period 2008-2012. Criteria weights of practically processed beet, fuel consumption, labor, sugar production, machinery capacity, the amount of molasses, and the amount of sales have been calculated by using DEMATEL method. Using the weights, Fuzzy TOPSIS method utilized to analyze the performances of the plants. The actual data were converted to triangular fuzzy numbers for fuzzification to use in Fuzzy TOPSIS method. The results of the study show that the plants having the highest performance scores are Ereğli, Ilgın and Eskişehir, whereas the plants having the lowest performance scores are Alpullu, Elaziğ and Kars, respectively.