

TITLE: INDUSTRIAL YEASTS FOR ETHANOL PRODUCTION BY SWEET SORGHUM

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ABSTRACT:

Ethanol, a renewable alternative to fossil fuels, is expected to increase more than twice the current production to meet all domestic demand estimated by 2030. The sweet sorghum has been highlighted as viable to produce ethanol, due to its characteristics. In this context, the objective of the present work was to evaluate the microbiological viability of industrial yeasts in the fermentation of sweet sorghum broth for ethanol production. The research was carried out in the 2017 harvest, a randomized complete block design with 6 replicates, evaluating the Malibu J53 genotype with commercial yeasts FT-858L and PEDRA-2. The microbiological analyses were performed by the direct method during the fermentation process (inoculum, beginning, and end) to evaluate the viability of yeast cells, bud rate, and bud viability. According to the results, the inoculums were able for the fermentation process, since both presented cell viability higher than 85%, with average results for the yeast Pedra-2 and FT-858L of 92.08% and 91.22%, bud rate of 11.76% and 5.16%, bud viability of 82.35% and 81.59%, respectively. At the beginning of the fermentation process, among the yeasts used and the quantifications carried out, did not present a significant difference. The average results obtained for Pedra-2 and FT-858L for viability were 94.49% and 88.90%, bud rate of 3.29% and 7.73%, bud viability of 81.45% and 82.50%, respectively. At the end of the fermentation process, when soluble solids had a value of $\leq 1^\circ$, of the inoculum used, they did not present a significant difference in cell viability, with results of 91.72% for Pedra-2 and 85.97% for FT-858L. However, when the bud rate and bud viability were evaluated, they showed a significant difference, with a higher percentage of cell multiplication for the inoculum FT-858L (6.23%), different from Pedra-2 (2.52%), but the bud viability was significantly lower in comparison to Pedra-2, with average results of 72.17% (FT-858L) and 97.50% (Pedra-2). In this way, it is concluded that the inoculums evaluated, both present characteristics of industrial interest.

Keywords: Bioenergy; Biofuels; Microbial; *Sacharomyces Cerevisae*; *Sorghum bicolor* (L.) Moench.

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