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Ethanol production and anaerobic fermentation of agro-industrial wastes and sweeteners

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Abstract

The use of renewable energy sources is currently becoming unavoidable necessity for several reasons such as the price of oil is increasing; oil is non-renewable source of energy and pressures strongly on the global environment. The use of biomass to produce energy is one of the recent important topics for two different reasons. The first, energy production from biomass will reduce the environmental pollution, but the second, use of important crops such as wheat and corn for energy production is unethical practice. Many of the third world countries are suffering from food shortages. Recycling agricultural residues and lignocellulosic biomass for sustainable production of biofuels may present a practical solution. Ethanol made from biomass provides unique environmental, economic strategic benefits and can be considered as a safe and cleanest liquid fuel alternative to fossil fuels. An aerobic fermentation technology is important in enhancing crop residue use efficiency, biogas productivity and soil fertility. Fermentation technology may help reduce the use of fossil fuels and improve the environment in rural areas. Waste water which was remained after recovering of ethanol and removing the biomass from the fermentation medium had considerable levels of potassium (K), sodium (Na), magnesium (Mg), calcium (Ca), iron (Fe), copper (Cu) and manganese (Mn) and can be recommended for use in plant irrigation. The present work discusses the background of biomass production and the potentials of some agricultural residues and sweeteners in that aspect, bioethanol production technologies, and evaluation of whole plants vs agro-industrial wastes by using *in vitro* gas production technique to predict fractions of rumen fermentable organic matter.

Biography

Mohamed Emad A. Nasser has completed his Ph. D in Agriculture, 1999, Faculty of Agric., Kagoshima Univ., Japan and visitor Professor at September - November 2005, Tohoku University, Sendai, Japan then, visitor Professor at June, 2007 - May 2008, Laboratory of Animal Nutrition, Center for Nuclear Energy in Agriculture, Sao Paulo University, CENA-USP, Brazil. Dr. Nasser is professor of rumen microbiology. He is supervising on many students of Master and Doctor Course. He has attended many international scientific conferences and workshops. He involved in many scientific research projects. Dr. Nasser has published more than 58 papers in reputed journals and serving as an editorial board member of repute.