

2<sup>nd</sup> International Congress and Expo on**Biofuels & Bioenergy**

August 29-31, 2016 Sao Paulo, Brazil

**Design, construction and operation of a crushing machine for organic wet waste of a restaurant in Mexico**Camacho Villan Erik Oswaldo and Y Castro Gonzalez Alejandra  
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A biogas plant at semi-industrial level was installed to one of the 23 restaurants of University City. The biogas substitutes 6% of the total heat energy consumption of the restaurant. The crushing machine investment represented 80% of the total investment cost of the biogas plant. The efficiency of the anaerobic degradation process depends on an efficient system of crushing. For the operation of the biogas plant 3 people were needed, because the crushing of organic waste could take up to 3 hours. 50 kg/day of organic matter were processed to reduce their size from 25 cm to 3 cm. The crushing time represented around of 90% of work in the plant. In Mexico, the crushing machine must to be imported and the high cost reduces the economic viability of the plant, so we decided to design and construct a prototype of crushing machine with the following characteristics: Size reduction by cutting with engine power of 1.5 Hp, speed of 425 rpm, manufacture material of stainless steel 304, 3 rotors and 3 blades coupled to the rotor and 2 fixed blades in the crushing chamber. This new crushing machine decreased its investment in 95% of the cost of a imported machine. This crushing machine and its components are in the process of obtaining a patent. The optimum operation of the crushing machine reduced the hydraulic residence time in the hydrolysis and methanogenesis process from 30 to 18 days. Therefore also helps to reduce the size of the digester reactor for future designs for organic waste anaerobic treatment of a restaurant.

[kio1989\\_1@hotmail.com](mailto:kio1989_1@hotmail.com)**Exploitation of transgenic technology to use plant oil for direct use as biodiesel**Iqbal Munir<sup>1</sup>, Ijaz Naeem<sup>1</sup>, Timothy P Durrett<sup>2</sup>, Aqib Iqbal<sup>1</sup> and Mian Afaq Ahmad<sup>1</sup><sup>1</sup>The University of Agriculture Peshawar, Pakistan<sup>2</sup>Kansas State University, USA

Energy crisis and environmental concerns are driving researchers to develop viable alternative fuels from renewable sources. The use of *Brassica juncea* oil as an alternative fuel suffers from problems such as high viscosity, low volatility and poor cold temperature properties. The seed of *Euonymus alatus* produces unusual triacylglycerol (TAGs) called acetyl triacylglycerol (acTAGs) where the sn-3 position is esterified with acetate instead of a long chain fatty acid. The enzyme *Euonymus alatus* diacylglycerol acetyltransferase (EaDacT) present in these plants is an acetyltransferase that catalyzes the transfer of an acetyl group from acetyl-CoA to diacylglycerol (DAG) to produce acetyl TAG (AcTAG). In order to reduce the viscosity of *Brassica juncea* oil by synthesizing acTAG, we have developed an efficient and simple *Agrobacterium* mediated floral dip transformation method to generate transgenic *Brassica juncea* plants. A binary vector containing the *EaDacT* gene under the transcriptional control of a glycinin promoter and with a basta selection marker was transformed into *Agrobacterium tumefaciens* strain GV-3101 through electroporation and subsequently to *B. juncea* through floral dip method. The basta resistant putative transgenic plants were further confirmed by PCR. The results showed that the *Agrobacterium*-mediated floral-dip transformation can be a successful strategy to develop transgenic *Brassica Juncea* having oil with modified fatty acids profile that could directly be used as biodiesel.

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