Quantity and quality of *Jatropha curcas* oil for biodiesel production in West-Nile and L. Victoria Crescent AEZs of Uganda

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Background

The use of fossil fuels has been criticized for its un-sustainability as well as negative effects on the environment. Use of biodiesel as an alternative has emerged as a prospect for abating this criticism. *Jatropha curcas* has been identified worldwide as one of the sources of biodiesel. Unlike edible oils, use of Jatropha oil for biodiesel production would eliminate the competition with food consumption since it is inedible. In Uganda, *J. curcas* is grown for different purposes. However, its suitability for biodiesel production is largely unknown among the stakeholders. Moreover, due to variations in agro-ecological conditions, differences in quality and quantity of Jatropha oil may arise. Knowing these variations is important in the promotion of *J. curcas* for biodiesel production in Uganda.

Objective

To evaluate the quality and quantity of *J. curcas* oil from different agro-climatic conditions in Uganda

Methods

Jatropha curcas seeds were collected from randomly selected farmers in Nebbi and Mukono districts representing North and Central regions respectively. The seeds were bulked according to the region in order to get a composite sample. Two samples each weighing 500 g were prepared for each region for laboratory analysis. Oil recovery and oil quality from *Jatropha curcas* seeds were determined using American Standards and Testing Methods (ASTM) (2003). Each parameter was determined twice for each sample per geographical location.

Achievements

Oil recovery was estimated at 51% w/w and 47% w/w for Nebbi and Mukono, respectively. This compares with the 22–48% results reported by some researchers (Achten et al. 2008; Becker and Makkar, 2008). Oil quality (Nebbi; Mukono) was determined as: kinematic viscosity (mm^2/s) 32.8, 31.4; Calorific value (MJ/Kg) 41.2, 33.8; Flash point (^0C) 258, 257; Cloud point (^0C) 2.0, 1.6; Density (Kg/m^3) 901, 896; Acid value (mg KOH/g) 36.5, 35.4; Iodine value (mg/g) 109,110. Basing on the Calorific values, the energy content of Jatropha oil is close to that of gasoline (43 – 47 MJ/kg); making biodiesel from Jatropha oil a potential substitute for gasoline.

Gaps

Further analysis is ongoing and the above results are still preliminary. Therefore discussions and conclusions can't be easily made. Similar work will be done for the Eastern region for comparison to ascertain the most suitable production zone.