

Egusi melon (*Citrullus lanatus*) crop – Malaysian new oil/energy source: production, processing and prospects

ABSTRACT

Egusi melon (*Citrullus lanatus*), a tropical crop mostly grown in parts of Africa, was introduced and grown in Malaysia to establish its adaptation and performance for oil and bio-energy. The crop was planted on a 200m² area planting plot on two seasons (Malaysia's dry and wet seasons). A total of 1127 fruits/200m² (or 5.635 fruits/m²), produced 45.5kg/200m² (or 0.2275kg/m²) seeds after processing during dry season. Harvest on wet season over same planting area, using same crop maintenance produced 448 fruits/200m² (or 2.24 fruits/m²), with total seed mass of 5.49kg/200m² (or 0.0275kg/m²). Randomly selected 100 fruits after processing produced an average of 330.6 seeds/fruit, weighting 65.652g/fruit. Planting, monitoring and harvesting to obtain seeds from the fruits was presented. Seeds were sun and then oven dried in line with the ASAE S 352 standards to achieve moisture content of 7.11%, and were then ground for oil extraction. Crude oil from the seeds was extracted using soxhlet extraction method with hexane as solvent. Oil content from 800g of both seed kernel and whole seeds were 55.64% (444.96g) and 44.97% (358.84g), respectively. The fuel properties of its biodiesels show Cetane numbers of 52.54 and 53.06 and kinematic viscosities (@ 400C) of 3.00 and 2.53 mm²/s for EDSOME and EWSOME respectively, with very low pour and cloud points for both. It was concluded to be good source of oil and can be used for biodiesel and biomass and recommended for planting in tropical countries, as it requires less rainfall for better yield.

Keyword: Egusi seed; Oil, cetane number; Kinematic viscosity; cloud and pour point