

# **Moisture Sorption Behavior of Jatropha Seeds at Temperature of 20°C as a Source of Vegetable Oil for Biodiesel Production**

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Knowledge of the hygroscopic properties and information on the moisture sorption behavior of jatropha seeds are critically required. This research studied the moisture sorption behavior of jatropha seeds allowing the development of a model correlating the equilibrium moisture (EMC) and Free Fatty Acids (FFA) contents as a function of water activity and EMC, respectively. Two sets of sorption-isotherm experiments were performed to describe the relationship between equilibrium moisture and FFA contents with water activity, both for fresh and dried seeds. The seeds are conditioned in series of saturated salts having certain water activity.

The equilibrium moisture content increases generally with an increase in water activity in either desorption or adsorption. The hysteresis effect is more pronounced at Banten variety of jatropha seeds than Lampung variety. The FFA content of fresh seeds increases with an increase in water activity, while the FFA content of dried seeds is relatively constant.

The moisture sorption behavior of jatropha seeds reveals that like most product, it exhibits the sigmoid pattern. The BET, GAB, Harkins-Jura, Halsey and Oswin models are recommended as adequate in predicting the amount of moisture adsorbed or desorbed at known humidity. The relationship between equilibrium moisture and FFA contents of jatropha seeds shows that the polynomial equation is the best fitting for fresh seeds, and constant equation for dried seeds.