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Material and Energy Balance Calculations for Commercial Production of Whole Neem Fruit Powder using Particle-Size Distribution and Energy Models

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Abstract

Neem-based pesticides are well known to reduce agriculture pollution. In previous work¹ authors found that free-flowing fine powder of whole dry neem fruits (called as PNF-Powder Neem Formulation) of size range 300 μ m to 390 μ m i.e. (-44+60 mesh) was the optimum size range. Azadirachtin which is a key ingredient of neem is quite stable in PNF. This paper delineates material and energy balance to produce 1 ton of PNF on the commercial level by using hammer mill. The Particle size distribution models and classical energy consumption models were used to fit the experimental data generated by changing the hammer mill screen.

Keywords: Co-grinding; whole neem fruit, hammer mill, particle-size distribution, energy