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Evaluation of handling and storage characteristics of an intermediate granulated food ingredient using a fabricated screw extruder

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The laboratory scale screw extrusion agglomeration equipment was developed to assess its effectiveness in the granulation of pre-formulated food powders in which bitter gourd ampalaya powder as the main ingredient. The handling and storage properties of the agglomerated products obtained from mixtures which have three components (bitter gourd power, cassava flour and water) were determined under two screw speeds (80 rpm and 120 rpm). The effectiveness of the equipment was based on the product properties such as Carr's Index, Hausner Ratio, friability and disintegration time. The Carr's index of the agglomerates ranged from 0.0333 to 0.07333 while the Hausner ratio ranged from 1.0346 to 1.0792. Thus, the handling property of the agglomerates produced by the equipment was excellent. The lowest friability measured was 0.096 indicative of strong and stable agglomerate. The average disintegration time observed was 6.04 minutes. The maximum mass output efficiency and throughput of the agglomeration equipment was 96.15% and 0.3163 kg/kW, respectively.

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The improvement of sustainable rainfall for Vietnamese agriculture based on grey model

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Vietnamese farmers have to deal with increasing difficulties and requirements as agriculture-related economic problems associates with crop over-production, cost increase of energy-based inputs and farmer's income cutback. In addition, the agricultural economy is greatly influenced by key features of climate such as temperature and rainfall, particularly because they contribute to the production of food, conservation of resources and improvement of soil fertility. Furthermore, requirements of global sustainability such as resource conservation, protection of environment and farming in partnership with nature are in urgent need since global warming increases the temperature while El Niño on the internal time scale affects the rain fall of the country. The occurrences of natural disasters in Vietnam have increased significantly due to the effect of the climate change, which in turn makes the rainfall become uncontrollable. Therefore, a design of sustainable agricultural systems is essential at this time. This research proposing a Grey (1:1) model (GM) will reveal the long term variations in temperature and rainfall. After collecting the data of variables for 15 meteorological of Vietnam in the period of 2012-2015, GM is used to forecast the future values of these variables for the 15 meteorological from 2016 to 2019. In this study we present the calibration and validation results from a spatially distributed hydrologic model driven by daily satellite-based estimates of rainfall for sub-basins of the Mekong Rivers flowing to Vietnam. Results provide an agricultural setting for the current rain fall degradation problem in Vietnam savanna; indicate possible directions and priorities for future sustainable agricultural research and present demands of improving yields without compromising environmental integrity or public health. Moreover, the study results help farmers plan to protect their crops as well as grow appropriate plants in order to get best harvest.

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