

Title Assessment of cost longan drying with box type dryer by central biomass energy utilization system

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Abstract

The energy crisis effects directory to drying cost. Especially longan which is one of the most important agro-industry in the Northern of Thailand. The propose of this research was to study the longan drying cost with box type dryer by using central biomass energy utilization system for replacing commercial fuel. The combustion chamber of furnace is cyclonical in shape with inner diameter of 0.77 meters, height of 2.40 meters. Air and rice-husk entered to combustion chamber in tangential direction with vortex rotation. It was found that the furnace could generate hot air temperature of 75 A 85 °C for longan drying air with 4 box type dryers and total capacity of 8,000 kg fresh longan. The dry longan had been the initial moisture content of 75% wet basis and final moisture content of 12 % wet basis in 40 hr drying time and yield of dried longan was 2,424 kg. The Rice-husk feed rate was 53.8 kg/hr and the average thermal efficient of system was about 82%. The fuel cost of longan drying by using central biomass energy utilization system is 1.10 bath/kg dried longan last than drying by using LPG or Diesel as fuel 6-7 baht/kg dry longan. The capital cost of the unit was 320,000 baht. The payback period of 46 and 28 batches was investigated for instead of LPG and Diesel respectively.