

RESEARCH PAPER

Studies on combustion of agricultural waste

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ABSTRACT

Coconut husk, areca nut husk, rice husk, saw dust and there combinations were used for experiment. The average moisture content were 12.09 per cent, 14.65 per cent, 15.09 per cent and 14.86 per cent for coconut husk, areca nut husk, rice husk, and saw dust, respectively. The average bulk density was 76.32 kg/m³, 81.98 kg/m³, 109.66 kg/m³ and 199.84 kg/m³ for coconut husk, areca nut husk, rice husk and saw dust, respectively. The average residue collected were obtained as 12.64 per cent, 10.77 per cent, 11.69 per cent, 48.18 per cent, and 38.43 per cent for T₁, T₂, T₃, T₄, and T₅, respectively. Biomass was analyzed for temperature and burn in developed burning chamber. The combustion study was carried in burning chamber. 1kg sample, it was observed that the temperature increases from 29.16 to 167.66 °C, 29.46 to 155 °C, 29.53 to 146.3 °C and 30.4 to 143.13 °C for T₂, T₃, T₄ and T₅, respectively during 20 min of durations. 2 kg sample, it was observed that the temperature increases from 28.8 to 180.96 °C, 29 to 165.36 °C and 28.5 to 146.43 °C for T₂, T₃, and T₄, respectively during 20 min of durations. But in case of T₁ and T₂ temperature increases from 29.26 to 232.56 °C and 30.06 to 152.73 °C during 0 to 15 minute of duration, respectively . For combustion of 3 kg sample, it was observed that the temperature increases from 29.5 to 248.96 °C, 29.96 to 227.46 °C, 29.6 to 174.13 °C and 30.73 to 165.8 °C for T₂, T₃, T₄ and T₅, respectively during 20 min of duration. But in case of T₁ temperature increases from 29.8 to 304.5 °C during 0 to 15 minute. The results indicated that coconut husk and areca nut husk were good for combustion in developed burning chamber. Burning of sawdust and rice husk and there combinations were not suitable for burning in developed burning chamber.

KEY WORDS : Biomass, Combustion, Agricultural waste

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