Design , Construction and Operational Aspects of Paddy husk fired furnaces for drying and Entomological Activities

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Rural Agricultural sector in Sri Lanka is still facing problems in the low cost devices used for the processing of fresh produce from the farmer. The environmentally soundness of the technologies will be more attractive and also sustainable than the conventional processing equipment. Furthermore, the renewable energy technologies of this nature would help to enhance the socio-economic development of rural community in Sri Lanka. The technologies described in this paper are based on an applied research under taken by the Institute of Post Harvest Technology (IPHT).Thus the furnaces designed at IPHT address both the aspects discussed above. The inclined step grate furnace used in the other parts of the world again require considerably high cost of construction due to costly materials used in construction.

This paper discusses the construction of low cost furnaces while attention is paid on the design and operational aspects. Furnaces of this nature can be coupled with dryers to get temperature of drying air nearly $65C^0$ with natural convection air flow. Generation of smoke from the combustion of paddy husk and its subsequent application as an insect pest control mechanism could also be achieved using the cylindrical type furnace designed. The Adoption of heat recovery system was aimed not only to avert the contribution of heat to a synergistic effect but also to get the combustion process more efficient.