Technical feasibility study of low cost mechanical batch dryer (STR) was carried out at the Department of Farm Power and

2.3 Experimental set-up

At first, inner bin of STR dryer was set up in the suitable position at the workshop of Farm power and Machinery, BAU. The outer grain bin was fixed around the inner bin with the help of GI wire as per required volume of grain. Then eight *K type* thermocouples were set up in different points of the

2.4.1 Moisture content

The amount of watescbaddy graescis represonted

temperature distribution in Fig. 4a, b and c. There were no significant differences in temperature among the vertical locations (as mentioned in the Fig. 3) as because T_t, $T_{m,3}$, T_b sensors locations were at the same distance from the center of the inner bin from where hot air was entering into grain pile.

Fig. 3: Vertical air temperature distribution at different locations of STR dryer for the drying bin sizes of (a) 300 kg, (b) 400 kg, and (c) 450 kg

The temperature was varied initially among the horizontal locations because distances from the center of the inner bin were different. As for example, temperature at $T_{m,5}$ was much lower than temperature at $T_{m,1}$ after half an hour of starting drying operation (Fig. 4). After certain time depending on the size of the dryer, temperature distribution of all horizontal sensors location became almost same. Lower capacity STR dryer reached temperature equilibrium condition faster than higher capacity dryer (Fig. 4a, b and c). STR dryer of 450 kg capacity took 2 hr to reach at the same temperature

respectively (Table 2). The drying capacity increases with the increasing in sample size of paddy. The drying rates of STR dryer were 11.3, 12.2 and 15 kg/hr for S300, S400 and S450, respectively. The drying rate was also increased with the increasing in sample size of paddy.

The drying efficiency of S450 is greater than that of others due to higher energy use efficiency. The

4. Discussion

Variation of temperature, relative humidity and moisture TJT*0.0908 Tw[treatment S300 as higher amount fue0pplied, on)]TJ0 -1.2777 TD-*052608 Tw[he otighehand [he initial7 1

Spatial distribution of temperature and moisture in STR dryer

Doungporn S, Poomsa-ad N, Wiset L (2012). Drying