

Effect of heat-stress and physical workload on work-rest cycle and productivity in mangrove forest of Peninsular Malaysia

ABSTRACT

The main objective of this study was to determine the effects of heat stress on the health and productivity of forestry workers. The study included a method of assessment involving the use of standardized measuring equipment on several types of forestry works in mangrove forests. In this study, the thermal conditions and physical workload of workers were measured under various conditions, i.e., logging site, charcoal kiln, and nursery. A structure of the work-rest cycle could be designed properly using the standards of the American Conference of Governmental Industrial Hygienists (ACGIH). Result of the study showed that the mangrove forestry works in the logging site and charcoal kiln could be carried out continuously with 25% of working efficiency on achieving maximum productivity and 75% of the rest needed, while at the mangrove's nursery site it could be carried out continuously with 75% of working on achieving productivity and 25% of the rest needed. The adjustment of working productivity is therefore established between WBGT and the work-rest cycle in the design of work. Thus, it can be concluded that consideration in modifying the work-rest cycle will result in better management of heat stress rate on productivity and health being of the workers. Besides, this study recommends that more shaded areas for forestry workers to take rest to prevent heat illness and enhance working efficiency.

Keyword: Physical workload; Heat stress; Energy; Productivity; Forest operation; Mangrove