Production parameters of extracellular alkaline protease employing our laboratory isolate *Thermoactinomyces thalpophilus*PEE 14under solid-state fermentation (SSF) were optimized. Wheat bran the best substrate among the 15 substrates used for optimization, showed the highest activity (1620 PU/g). The physical and chemical parameters were also optimized. The maximum enzyme activity under optimum conditions was obtained with incubation period 72 h, incubation temperature 55ºC, initial *p*H 10, inoculum level 20%, level of salt solution 2:10 and initial moisture level 80%. Increase of enzyme activity by 60% (2576 PU/g) was observed when compared with the unoptimized conditions.