ABSTRACT
Flour mill (laboratory model) was evaluated for its milling performance for two ragi varieties GPU-28 and L-15 under different plate clearances, feed rates and plate speeds. Grinding plate clearances selected for the study were 0.3, 0.5 and 0.7mm, feed rates tested were 90, 100 and 115 kg/h and plate speeds taken were 450, 600 and 700 rpm. Flour mill was evaluated for its milling efficiency and milling loss under different combinations of plate clearances, feed rates and plate speeds. The flour recovery was recorded at each plate clearance, feed rate and plate speed combination. The different fractions of flour obtained from the above study were analyzed for their fineness modulus, nutritive value and consistency. Milling efficiency decreased with the increase in plate clearance. The increase in feed rate and plate speed increased the milling efficiency initially to an optimum level later on decreased with further increase in feed rate and plate speed. Milling efficiency decreased from 85.0 to 61.7 per cent and 83.7 to 61.9 per cent with the increase in plate clearance from 0.3 to 0.7 mm for GPU-28 and L-15 varieties of ragi, respectively. The maximum milling efficiency of 85.0 per cent was recorded at the combination of 600 rpm plate speed for GPU-28 and 83.7 per cent for L-15 ragi seeds. Fineness modulus of flour increased with the increase in plate clearance. As the feed rate and plate speed increased up to an optimum level, the fineness modulus decreased and further increase in feed rate and plate speed, increased the fineness modulus. Fineness modulus increased from 2.04 to 3.44 and 2.05 to 3.45 with the increase in plate clearance from 0.3 to 0.7 mm for the ragi flour from varieties GPU-28 and L-15, respectively. The least fineness modulus was recorded at 0.3mm clearance followed by 0.5 mm. Fineness modulus decreased from 2.18 to 2.04 and 2.21 to 2.05 with the increase in feed rate and attained the least value at a feed rate of about 100 kg/h for GPU-28 and L-15 ragi flours. Beyond this, the fineness modulus increased as the feed rate increased. Fineness modulus decreased from 2.36 to 2.04 and from 2.37 to 2.05 as the plate speed increased from 450 rpm to 600 rpm and it increased with further increase in plate speed in case of both the varieties of ragi. The fineness modulus recorded the least values of 2.04 and 2.05 at 600 rpm plate speed for GPU-28 and L-15 varieties ragi flour, respectively.