

**THESIS TITLE : EFFECT OF LEVELS OF HIGH QUALITY FEED PELLETT (HQFP)  
AND CONCENTRATES SUPPLEMENTATION ON RUMINAL  
FERMENTATION, MILK PRODUCTION AND COMPOSITIONS IN  
DAIRY COWS.**

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**ABSTRACT**

This experiment was conducted to investigate the effect of levels of high quality feed pellet (HQFP) and concentrate supplementation on feed intake, digestibility, ruminal fermentation, milk production and composition. Eight primiparous Holstein Friesian (87.5%) crossbred cows with initial weight of  $320.8 \pm 14.3$  kg and  $157 \pm 19.5$  days in milk (DIM), were randomly divided into two groups in 2 X 2 factorial arrangement in a Switch back design. Factors were concentrate to milk yield ratio [(1 to 2, C1:M2) and (1 to 3, C1:M3)] and high quality feed pellet supplementation [(0, -HQFP) and (1 kg of HQFP per head per day, +HQFP)]. Fresh ruzi grass (*Brachiaria ruzizeinsis*) was offered ad libitum as a roughage source. Based on the experiment, it was found that concentrate intake (kg/d, %BW and  $g/kgW^{0.75}$ ), predicted nitrogen for microbial growth (PNMG) in the rumen and concentration of total volatile fatty acids (TVFAs) of cows which received C1:M2 were significantly higher than those which received

C1:M3 ( $P<0.05$ ), but total intake (kg/d, %BW and  $\text{g/kgW}^{0.75}$ ), milk yield, milk fat, milk protein, milk lactose, solids-not fat (SNF) and total solids (TS) were not significantly different ( $P>0.05$ ) between the cows fed C1:M2 and C1:M3. The high quality feed pellet (HQFP) supplementation increased concentrate intake (kg/d, %BW and  $\text{g/kgW}^{0.75}$ ), digestion coefficients of dry matter (DM), organic matter (OM), neutral-detergent fiber (NDF), acid-detergent fiber (ADF), metabolizable energy (ME), concentration of ammonia-nitrogen in the rumen and PNMG in supplemented cows when compared to supplemented cows ( $P<0.05$ ). It was also found that both dietary factors, HQFP supplementation and concentrate to milk yield ratio at 1 to 2, decreased methane production in the rumen ( $P<0.05$ ). Methane production in the rumen was the lowest level in cows which received C1:M2 and HQFP supplementation as compared to the cows which received other dietary treatments. In conclusion, supplementation of HQFP increased efficiency of rumen fermentation but the extent of that did not have any effects on milk yield and milk compositions. In addition, supplementation of HQFP (1 kg/d) could reduce amount of concentrate use from 1 to 2 to 1 to 3 concentrate to milk yield ratio, respectively.