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On-farm use of legume (*Phaseolus calcaratus*) and Ruzi grass on rumen fermentation and milk production in lactating dairy cows

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ABSTRACT

The experiment was conducted on 10 small-holder dairy farmers under the administration of Dairy Promotion Organization of Thailand (DPO) in the Northeast region of Thailand. The aim of the research was to investigate the effect of legume (*Phaseolus calcaratus*, PC) as roughage mixed with Ruzi grass for dairy cows. Four cows per farm were assigned into 2 groups including Ruzi grass (control) and PC mixed with ruzi grass (at the ratio 50:50), were given *ad libitum* as a roughage sources. All cows were offered a concentrate with ratio to milk yield of 1:2. The results revealed that roughage source did not affect on ruminal pH and temperature, ammonia nitrogen, blood urea nitrogen, and milk urea nitrogen concentrations. Total volatile fatty acid, acetic acid, propionic acid, and butyric acid proportions, and acetic acid to propionic acid ratio were not significantly different among treatments. Dry matter intake and digestibility of nutrient including dry matter, organic matter, crude protein, neutral detergent fiber and acid detergent fiber were not significantly different among treatments. Moreover, amount of digested dry matter was similar among treatments. However, cows received PC mixed with Ruzi grass tended to be higher on dry matter, organic matter, and crude protein digestibility and dry matter digestible nutrient intake than control group. Milk yield, and 3.5% fat corrected milk were significantly higher ($P < 0.05$) in cow fed with PC mixed Ruzi grass than those the control group. Milk compositions and feed cost were similar among treatments; in contrast, the income and profit from milk selling were greater in cows fed with PC mixed with Ruzi grass than the control. High quality roughage such as PC mixed with Ruzi grass could be advantages for dairy farming in the Northeast of Thailand.

KEYWORDS

Phaseolus calcaratus; Ruzi Grass; Rumen Fermentation; Milk Production; Dairy Cows; Small-Holder Dairy Farmers

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