

The Effect of Improved Ration on Body Condition, Metabolic Profile, and Reproductive Performance in Severely Emaciated Crossbred Dairy Cows

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Severely emaciated dairy cows typically fall at 1 on a 1 to 5 body condition score (BCS) scale. Malnutrition leads to emaciation in dairy cows, resulting in poor reproductive performance. This study assessed the effect of feeding a nutritious ration on the BCS, serum non-esterified fatty acids (NEFA), and reproductive performance of dairy cows. Twenty severely emaciated crossbred (Friesian x Jersey) dairy cows, between 150 to 180 days post-partum, were fed *ad-libitum* with a mixed ration containing 13.79% crude protein (CP) and 4.79 MJ/kg metabolizable energy (ME). The ration included guinea grass (*Megathyrsus maximus*), commercial concentrates, bypass fat, and a vitamin and mineral pre-mixture (50 g/d). Body weight (BW), BCS, and ovary size, measured by per rectal examination, were recorded at the start of the experiment (day 1) and on days 14, 30, 60, and 90, until pregnancy was confirmed. Blood samples collected on the same days were analyzed for NEFA levels. When cows reached a BCS of 2.5 and ovary diameter exceeded 2.5 cm, they were synchronized using the Ovsynch protocol. Pregnancy status was diagnosed by ultrasound scanning on the 40th day post-insemination. At day 1, the BW, BCS, and NEFA levels were 392 kg, 1.05, and 0.57 mmol/L, respectively. Data were analyzed by analysis of variance and Duncan's Multiple Range Test. In response to the mixed ration, the BW and BCS improved ($P < 0.05$), reaching 451 kg and 2.50 at day 60. The NEFA levels, ranging from 0.38 to 0.20 mmol/L from 14 to 90 days, indicated that the cows achieved a positive energy balance as early as 14 days after starting the mixed ration. Additionally, the ovarian thickness of both ovaries gradually increased during this period. The conception rate was 60% after the first AI, and 95% of cows were pregnant by 125 days after the third AI. The results indicate that severely emaciated dairy cows suffering from negative energy balance can achieve a positive energy balance and conceive by feeding a ration containing 13.79% CP and 4.79 MJ/kg ME.

Keywords: Conception Rate, NEFA, Ovsynch Protocol, Ovary Diameter

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