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Sward allowance at early lactation of primiparous dairy cows : IV-Body condition score and reproductive parameters

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Introduction The resumption of ovarian cyclicity after parturition is closely related to the negative energy balance in this period; the time to the beginning of the recovery of the energy balance is positively correlated with the time to first ovulation (Butler et al. 1981). The reinitiation of ovarian cyclicity was delayed in primiparous cows and this was consistent with longer intervals from parturition to first service and to conception in these animals (Meikle et al. 2004). Grazing first calving cows have a decreased reproductive efficiency, since they recover from the negative energy balance period with more difficulty than multiparous cows. Dry matter intake (DMI) is a main factor affecting energy balance and thus, anoestrus length. DMI under grazing is largely determined by sward state (Chilibröste et al., 2005). In this study the effect of daily sward allowance on the evolution of body condition score (BCS), postpartum anoestrus length and on the diameter of the dominant follicle (DF) was investigated in primiparous cows under grazing conditions.

Materials and methods The experiment was carried out at the EEMAC Research Station, Agronomy Faculty, Uruguay (30° S). Primiparous dairy cows (n=44, BW=595±41 kg, age at calving=2.96±0.11 years and BC=3.7±0.3) were blocked by BW, age and BC, and randomly assigned from calving up to 60 days in milk to one of the following treatments (n=11 each): Control with a 100% TMR diet (*ad libitum*) and the grazing treatments, high (HA, 30 kg DM cow day⁻¹), medium (MA, 15 kg DM cow day⁻¹) and low sward allowance (LA, 5 kg DM cow day⁻¹). The grazing treatments were supplemented with TMR to cover their maintenance requirements. All the cows were individually supplemented at 18:00 h with a mixture of corn silage (10 kg) compound feed (4.8 kg) and grass hay (0.4) on a fresh weight basis. Cows were milked at 5:00 and 16:00 h and were allowed to graze between 8:00 and 15:00 h every day on a 7-days rotation schedule on a pasture of mixed grasses and legumes. BCS was registered weekly (scale 1=emaciated, 5=fat). The initiation of ovarian cyclicity after calving was determined when progesterone plasma levels were above 1 ng/ml in blood samples taken twice a week the diameter of the DF was measured 57 days postpartum by transrectal ultrasonography (Aloka 500, transducer 5 MHz). BCS was analysed as repeated measurements in time using Proc MIXED of SAS v. 8. The length of postpartum anoestrus and the diameter of the dominant follicle were estimated by Proc GLM (SAS) and the probability of reinitiation of ovarian cyclicity by Proc Genmod (SAS).

Results and discussion Even if all cows lost BCS during the experiment, the control group presented significantly higher BCS (3.33±0.04) than HA group (3.18±0.03), which in turn was higher than MA and LA groups (3.05±0.03 y 3.07±0.03 respectively). Treatment was highly correlated with BCS at the time of reinitiation of ovarian cyclicity (r=-0.61, p<0.0001), and BCS at this time was inversely associated with the length of postpartum anoestrus (r=-0.39 P=0.01). Thus, cows with higher BCS presented shorter intervals calving to first ovulation. Treatment effect did not reach significance on postpartum anoestrus length, values for Control, HA, MA and LA groups were (days): 29±14, 29±14, 30±15, y 34±17 respectively. The DF diameter on 57 days postpartum was lower in LA group than for the HA, MA and control group (9.33 vs 14.4, 14.6 and 12.8 mm respectively p=0.01). The diameter of the DF was also correlated with the loss of BCS during the first 30 days postpartum (r=-0.54 P<0.001): cows that lost less BCS presented a larger DF.

Conclusions The different sward allowance determined distinct energy balances that were reflected in the BCS, which in turn was related with the reproductive parameters measured in this study.

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