Effect of winter nutritional management on the onset of puberty in beef heifers under range conditions

G. Quintans, A. Scarsi, A. Costa, R. Moreira, W. Ayala and W. Ibañez
National Institute of Agricultural Research (INIA), Ruta 8 Km 281, 33000, Uruguay

gquintans@tyt.inia.org.uy

Under extensive grazing conditions, the possibility to reduce the age at first service to 15 or 18 months old is difficult because after weaning beef females calves generally loose weight when they are managed only on native pastures. Previous studies showed that although heifers achieved similar final live weight, they did it through different daily live weight gains distribution and winter growth was the one that most affected the onset of puberty (Quintans et al., 2004; Quintans et al., 2007). The aim of this study was to evaluate three different winter daily live weight gain on the onset of puberty in beef heifers in Uruguay.

Description of the experiment:

Thirty six Angus x Hereford heifers (8 month old; 139±3.1 kg) were assigned to three treatments during winter period (16 weeks):
√ grazing on native pastures to loose weight (Low=L)
√ grazing on improved pastures so animals achieve moderate daily live weight gain (DLWG) (Medium=M)
√ grazing on improved pastures so animals achieve high DLWG (High=H)

After, all animals were managed together on improved pastures during 27 weeks to allow them to present high LWG.

Heifers were blood sampled weekly for P4 analysis from week 18 to 43 and estrous detection was recorded in that period.

At week 43 dorsal fat depth was measured by ultrasound

LW was recorded at biweekly intervals.

Results

Animals in L group did not loose weight and they presented low DLWG, while the other two groups of heifers presented the expected different winter DLWG

Table 1. Seasonal daily live weight gains (kg/a/d)

	DLWG in winter	DLWG in spring	DLWG in summer
L	0.134±0.03 a	0.808±0.03 a	0.590±0.05 b
M	0.385±0.03 b	0.807±0.03 a	0.312±0.05 a
H	0.535±0.03 c	0.804±0.03 a	0.363±0.05 a

Table 2. Percentage of pubertal animals, live weight (kg) and age (days) at puberty

	% pubertal animals	Live weight at puberty	Age at puberty
L	17 a	228,4 ± 24,3 a	448 ±27 a
M	75 b	255,8 ±10,3 a	447±12 a
H	58 b	264,0 ± 11,8 a	434±13 a

Pubertal animals presented higher levels of dorsal fat depth at the end of the experiment than non-pubertal (2.44±0.16 vs 2.05 ±0.15mm)


Heifers in Low winter treatment


Heifers in Medium winter treatment


Heifers in High winter treatment

More heifers from medium and high compared to low winter-DLWG achieved puberty although they were of similar live weight and age.

References
Quintans *et al.*, 2004. 15th International Congress on Animal Reproduction, Brasil.
Quintans *et al.*, 2007, XXI Reunión Latinoamericana de Producción Animal (ALPA), Perú.