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Progesterone determination in milk in grazing Holstein cows as a predictive tool for reproductive efficiencyM Carriquiry^{*1}, F Peñagaricano¹, P Pessina², A Fernandez-Foren², D Cavestany², G Rovere¹, A Meikle²¹Faculty of Agronomy, UdelaR, Montevideo, Uruguay; ²Faculty of Veterinary, UdelaR, Montevideo, Uruguay

Holstein cows (n = 884; maximum consanguinity = 2%, 1–3 lactations) of seven commercial farms in a grazing dairy production were selected to conduct a field study to estimate phenotypic associations between commencement of postpartum luteal activity after calving (PPLA) and luteal function, cow category (parity and age or calving interval, CI), body condition score (BCS) at calving and change of BCS from calving to 60 days postpartum (DPP; Δ BCS), milk yield and reproductive parameters. Primiparous cows were categorized according to age (20–28 months, 28–35 months, >35 months) and multiparous cows according to CI length. All cows were, within each farm, classified in low, medium or high (33rd percentiles) milk yielding cows. Cow BCS was registered twice a month from -30 to 120 DPP. Milk samples were taken twice a week from 10 to 90 DPP for progesterone (P4) determination. A luteal sample was considered when P4 concentrations in skim milk were ≥ 1 nM and PPLA was considered as the interval between calving and the first luteal sample. Means were considered to differ when $p \leq 0.05$. Probability of pregnancy within 100 DPP was affected by farm, cow category, BCS at calving and Δ BCS, and luteal function (number of luteal samples/total milk samples), but did not differ due to milk yield. The PPLA tended ($p = 0.066$) to be longer while the probability of pregnancy within 100 DPP was less in younger than older primiparous cows. Multiparous cows with longer CI (380 < CI < 540 days and CI > 540 days) had longer PPLA than cows with shorter CI (<380 days). Multiparous cows with CI > 540 days had a lower probability of pregnancy within the first 100 DPP than CI < 380 days and 380 < CI < 540 days. Multiparous cow data suggest that fertility is a repeatable trait. Concentrations of P4 in skim milk luteal samples did not differ among cow categories, but increased with BCS at calving (2.4 nM per unit) and Δ BCS (1.8 nM per unit), and tended to be affected ($p = 0.08$) by the interaction between cow category and milk yield. In older primiparous and multiparous CI < 380 days cows, concentrations of P4 were lower for low than high milk yielding cows whereas in multiparous CI > 540 cows, concentrations were greater for low than high milk yield cows. Cow BCS at calving had a major effect in all reproductive parameters: calving to first service interval decreased 36 days and pregnancy rates within 100 DPP increased from 4% to 43% as BCS at calving increased from 2.25 to 3.25 unit. The luteal function also affected reproductive parameters: an increase from 0 to 1 of luteal samples/total milk samples, samples implied a decrease of 67 days in calving to first service interval. To our knowledge, this is the first field study that analyzes fertility based on P4 determinations in milk, BCS at calving and change of BCS during the first 60 DPP. This may allow a better prediction of the reproductive performance of dairy cows.

Key Words: Dairy, postpartum anestrus, pregnancy

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Early weaning in primiparous autumn-calving cows in low body condition score: effects on body condition, nefa and insulin concentrations and ovarian cyclicityG Quintans^{*1}, I Saravia², R Wijma², A Scarsi¹, C López-Mazz³¹Instituto Nacional de Investigación Agropecuaria, Treinta y Tres, Uruguay; ²Facultad de Veterinaria, Montevideo, Uruguay; ³Facultad de Agronomía, Montevideo, Uruguay

In rangeland, when age at first mating is 18–20 m old, heifers generally calve during late summer-early autumn and calves suckle during winter when native pastures have low availability and quality, reducing milk yield and weaning weight of calves. Also, these cows are weaned and rebred in the following spring, since they have low probability to reinstate ovarian cyclicity during autumn-winter. However, an early weaning (EW) may advance the reinitiation of ovulation allowing cows

to rebred in autumn. The aim of this experiment was to evaluate the effect of an EW on different productive parameters. At 70 days postpartum sixteen primiparous autumn-calving cows (crossbred Angus \times Hereford) with a body condition score (BCS, scale 1–8) of 4.1 ± 0.1 unit, were assigned to two treatments: calves suckling ad libitum (S, n = 7) and calves that were weaned from their dams (EW, n = 9). All cows were in anestrus at the time treatments commenced (Day 70; Day 0 = calving) and they were managed together on native pastures with a forage allowance of 10%. Calves from S group were weaned on Day 210 (end of winter). BCS was measured every 14 days from Day 70 (April-22) to 285 (December-1, onset of AI). Cows were blood sampled weekly from Day 56 to 140 and biweekly from Day 140 to 294. Presence of corpus luteum (CL) was recorded every 14 days by ultrasonography from Day 70 to 285. BCS, NEFA and insulin were analyzed by repeated measures using the MIXED procedure with time as the repeated effect. Probability of cycling cows was analyzed using generalized linear models using the GENMOD procedure. Cows BCS decreased in both groups from the beginning of the experiment until Day 169 reaching an average of 3.4 u. Then it increased until the end of the experiment, but cows from EW group presented greater ($p < 0.05$) BCS than C cows from Day 225 to 385 (average 4.0 ± 0.1 vs. 3.6 ± 0.1 u for W and S, respectively). NEFA concentrations increased ($p < 0.0001$) between Day 126 and Day 182, decreasing after that, until the end of the experiment. Insulin concentrations varied along the experiment ($p < 0.0001$) but no differences were found between treatments (average along the whole experiment: 7.31 ± 0.34 and 7.61 ± 0.30 for S and EW, respectively). EW cows had more probability to cycle at Day 211 than S cows (44 vs. 14%, $p < 0.05$) and at day 285 (100 and 71% cows had CL in EW and S respectively; $p < 0.005$). During winter (from Day 113 to 210) NEFA concentrations increased and BCS decreased, reflecting a mobilization of body reserves in all cows. EW in primiparous autumn-calving cows with low BCS was not successful in inducing ovulation during the early postpartum period. However EW cows had greater BCS and more probability to ovulate at the end of the spring when AI started that would give them more chances to be pregnant compared with S cows.

Key Words: Autumn calving, early weaning, ovarian cyclicity, nefa, urea

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Effect of body condition and supplementation during postpartum on the onset of ovarian activity and pregnancy rate in crossbred cows (*Bos taurus* \times *Bos indicus*) under tropical conditionsC Dominguez^{*1}, R Perez¹, AZ Ruiz², N Martinez³, K Drescher³¹Universidad Experimental Romulo Gallegos., San Juan de los Morros, Guarico, Venezuela; ²Universidad Central de Venezuela, Facultad de Ciencias Veterinarias, Maracay, Aragua, Venezuela; ³Universidad Central de Venezuela, Facultad de Agronomía, Maracay, Aragua, Venezuela

The availability of nutrients in the tropics is a limiting factor on reproductive variables in livestock. The reproductive behavior of the cow during postpartum (PP) has been linked to body condition (BC), which at the same time, responds to changes in energy metabolism. A research was conducted to evaluate feeding level (FL) at PP and BC on blood glucose concentration (GLUC), uterine involution (UI), ovarian activity (OA), and pregnancy rate (PR) on postpartum cows under tropical conditions. Thirty-two crossbred cows (*Bos taurus* \times *Bos indicus*) fed with graze pasture (*Eriochloa polystachya*, *Cynodon nlemfuensis* and *Cynodon dactylon*) were randomly assigned to the following treatments (T), using a combination of BC at calving and FL during PP, as follows: T1: HBCHFL, high BC to PP (BC: ≥ 2.5) and high FL PP (HFL); T2: LBCHFL, low BC to PP (BC: <2.5) and HFL; T3: HBCLFL, HBC and low FL PP (LFL); and T4: LBCLFL, LBC and LFL. The BC was measured every 15 days PP (DPP) until 120 DPP. The feed ration was made by a supplement based on sorghum, maize, cotton seed, urea, salt, molasses, bi-calcium phosphate plus a mineral block (BM). The expression of glucose transporters (Glut-1) in adipose and muscle biopsies was assessed by Western blot analysis. Reproductive activity and UI were evaluated by transrectal palpation and ultrasound (Aloka SSD 900 Co. Ltd., Tokyo, Japan) from 15 to 90 DPP, once a week before onset of heat and twice a week after heat, using a 7.5 MHz linear probe. The UI,