Association between Age at Calving and Overall Health, Reproductive Performance and Milk Yield in Holstein Heifers.

M. Gobikrushanth[2], A. Behrouzi[1], I. López Helguera[3] and M.G. Colazo[1]

[1]Department of Agricultural Food and Nutritional Science, University of Alberta, Edmonton, AB; [2]Livestock Research Section, Alberta Agriculture and Forestry, Edmonton, AB; [3]Agrotecnio Center, Animal Production Department, University of Lleida, Spain. E-mail: marcos.colazo@gov.ab.ca

The objectives were to evaluate the association between age at first calving (AFC) and 1) overall health [incidence of postpartum disorders by 60 days in milk (DIM)], death and culling rate up to 90 DIM, 2) reproductive performance (i.e. days to first AI, conception rate to first AI, pregnancy loss and pregnancy by 150 DIM), and 3) average milk yield by 90 DIM and 305-mature equivalent (ME) in Holstein heifers. Data were obtained from 11 dairy herds (n = 328 heifers) in Northern and Central Alberta. The overall AFC was 25.0 months (range, 21.4-35.5) and average body condition score at calving was 3.5 (range 2.75-4.25). Age at first calving was variable among farms, the mean AGF ranged from 23.6 to 26.7 months. For further analysis, heifers were grouped into 3 groups based on AFC (< 23, 23.0-25.9 and ≥ 26.0 months). Age at first calving was not associated to postpartum disorders, but death rate was approximately 10 times greater (P<0.01) in older heifers (≥ 26 months) compared to the other two groups (8.4 vs. 0.8%). Culling rate did not differ among AFC groups and it was 5.2% (17/328). Moreover, AFC was not associated to days to first AI (mean, 75.5 days), pregnancy loss after first AI (7.3%), nor to pregnancy by 150 DIM (69.0%). However, conception rate to first AI was lower (P<0.05) in the < 23 months AFC group (31.0%) compared to that in the medium (46.5%) and older group (47.8%). Although, average milk production by 90 DIM (3,135 kg) was greater (P<0.01) for older heifers (≥ 26 months) compared to the other two groups (overall, 2,863 kg), 305-ME milk did not differ among AFC groups. When heifers that experienced postpartum disorders were removed from the analysis, 305-ME milk was greater (P<0.01) for older heifers (≥ 26 months) compared to the other two groups (11,597 vs.10,579 kg).

Take Home Message: The AFC was variable among farms. Heifers calving at < 23 months had lower conception after first AI. Those calving at ≥ 26 months of age had greater proportion of deaths by 90 DIM, but also produced more milk. A complete economic analysis considering costs and revenues associated with AFC would provide further insight about the optimum calving age for Holstein heifers in Alberta.

This project was financially supported by Growing Forward 2 (a federal-provincial-territorial initiative) and Alberta Agriculture and Forestry. Authors thank the participating dairy producers, veterinarians and Mr. Jeromy Ten Hag (CanWest DHI) for cooperation.