Associations among Available Fertility Indexes and Reproductive Performance in Alberta Dairy Cows.

M. Gobikrushanth[2], K. Macmillan[1], D. Hipkin[3] and M.G. Colazo[1]

[1]Livestock Research Section, Alberta Agriculture and Forestry, Edmonton, AB; [2]Department of Agricultural Food and Nutritional Science, University of Alberta, Edmonton, AB; [3]Alta Genetics Inc., Balzac, AB; E-mail: marcos.colazo@gov.ab.ca

The relationships among Sire predicted transmitting ability (PTA) for Daughter Pregnancy Rate (DPR) and Cow Conception Rate (CCR) and reproductive performance were retrospectively analyzed in 822 lactating Holstein cows from 10 dairy herds in Alberta. We also examined the changes in DPR index and its relationship with reproductive performance in first lactation cows over 3 years in a single herd that selects for fertility. The Sire PTA and reproductive performance [overall conception rate (OCR), conception rate to first AI (CR1), pregnancy rate every 21 d (PR21) and by 150 DIM (PR150) and pregnancy loss (PL) after first AI] data were retrieved from DairyComp 305. In the analysis that included the 10 dairy herds, the Sire PTA for DPR and CCR ranged from -9.6 to 8.2 and -9.9 to 7.4, respectively. Overall CR1, PR150 and PL were 38, 65 and 12%. Sire PTA for DPR was associated to CR1 (P = 0.07) and PR150 (P < 0.01). The CR1 and PR150 of daughters from sires with a PTA for DPR of 8.2 were 50 and 80% compared to 25 and 44% for daughters from sires with a PTA for DPR of -9.6. Sire PTA for CCR was associated to PR150 (P = 0.07). Daughters from sires with PTA for CCR of 7.4 had greater PR150 (72 vs. 53%) than daughters from sires with CCR of -9.9. There was no association among Sire PTA for DPR or CCR and PL. In the analysis including a single herd, the average sire PTA for DPR in first lactation cows increased from 0.6 (range -4.8 to 5.6) to 2.4 (range -2.8 to 8.1) over 3 years. In year 1, OCR and PR21 for cows from sires with DPR above the average were 55 and 28% compared to 43 and 24% for cows from sires with DPR below the average. In year 3, the OCR and PR21 were 65 and 33% vs. 51 and 25% for cows from sires with DPR above versus below the average, respectively.

Take Home Message: Dairy producers could improve dairy cow fertility through genetic selection using semen from sires with high PTAs for DPR and CCR

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