

Effect of sexed-semen use on Holstein conception rate, calf sex, dystocia, and stillbirth in the United States

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Most artificial-insemination organizations in the United States now market sex-sorted semen. For 10.8 million US Holstein breedings with conventional semen since January 2006 and 122,705 sexed-semen breedings, data were available from all breedings for conception rate, 12 and 9% of breedings for calf sex and dystocia (births reported as requiring considerable force or extremely difficult), and 10 and 9% for stillbirth (born or died within 48 h). Statistical differences were determined by chi-square tests. Conception rate and calf sex ratios differed ($P < 0.001$) with use of conventional and sexed semen. Conception rate was 57% for heifers and 30% for cows with conventional semen and 43 and 25%, respectively, with sexed semen. For heifers, 50% of calves were single females; 49%, single males; and 1%, twins with conventional semen; corresponding percentages for cows were 45, 49, and 5. With sexed semen, 90% of calves were single females; 9%, single males; and 1%, twins, for heifers and 85, 11, and 5%, respectively, for cows. Significance of differences for dystocia and stillbirth incidences with use of conventional and sexed semen varied. For births from conventional semen, incidence of dystocia was 4% for single female calves, 8% for single male calves, and 8% for twin calves for heifers ($P < 0.001$) and 2, 3, and 5%, respectively, for cows ($P < 0.001$); corresponding incidences of dystocia with sexed semen were 4, 9, and 4% for heifers ($P < 0.001$) and 1, 1, and 2% for cows ($P > 0.05$). Stillbirth incidence with conventional semen was 9% for single females, 11% for single males, and 15% for twins for heifers ($P < 0.001$) and 4, 4, and 8% for cows ($P < 0.001$); corresponding incidences of stillbirth with sexed semen were 10, 15, and 13% for heifers ($P < 0.001$) and 3, 4, and 8% for cows ($P > 0.05$). Differences between conventional and sexed-semen breedings for dystocia and stillbirth incidences may have been affected by herd recording practices.

Session 21**Theatre 9****Pelvic opening and calving ability of Charolais cattle**

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The pelvic opening has been systematically recorded in the purebred Charolais herd of INRA at Bourges on heifers and adult cows as well as on the young males. The herd was founded in with a representative sample of 347 Charolais heifers. During the next 20 years a sample of 83 Charolais sires was used to randomly inseminate the females. All the progeny integrated the herd without any selection unless physiology disorders: 1,430 female and 1,508 male calves respectively. Each heifer was bred for calving at 3 years of age and each female was kept in the herd for 3 more breeding years, unless of accidents. Pelvic opening was measured on males just before slaughtering at 15 or 19 months and on growing heifers at 12, 18 and 24 months. Pelvic opening was also measured on cows the next day of each calving. The calving ease score and calf birth weight were also recorded. These two latter traits are analysed in a mixed linear model with direct and maternal genetic effects, while the pelvic opening at calving is analysed in a mixed linear model with repeated recording. Pelvic opening of male calves and of growing heifers are separate traits analysed in a mixed linear model with direct genetic effects only. In all the analysis the random effects are the animal genetic effects taking into the whole pedigree of the experimental animals. Variance components will be estimated jointly with the VCE software. Direct and maternal heritability and genetic correlation coefficients will be then estimated. The estimation of the correlation between the maternal effect of calving ease and pelvic opening at calving will be of primary interest for unravelling the contribution of the cow ability to the calving process. The correlation between the maternal effect of calving ease and pelvic opening of the growing heifers and particularly of the young males will be estimated for quantifying the accuracy of the precocious selection criteria for improving calving ability.