Book of Abstracts

of the 75th Annual Meeting of the European Federation of Animal Science

Book of Abstracts No. 34 (2024)
Florence, Italy
1-5 September, 2024

Selection for the price of young calves in Italian Simmental breed

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Italian Simmental (IS), Pezzata Rossa Italiana, is a dual-purpose cattle breed, that counts about 90.000 cows registered in its official Herdbook. Selection for beef purpose is based on data collected on young bulls in performance test and the muscling score that is registered by technicians on primiparous milking cows. The selling of calves is a source of revenue for farmers. A tool to select animals for the commercial quality of the calves is not currently available. Kovieh Cooperative is an important wholesale cattle organization operating in Bolzano province (Trentino−Südtirol region, northeast Italy). Kovieh collects purebred and crossbred calves from several dairy herds and sells them individually during public auctions every week. Body weight at sale (BW), price per kg, and the economic value of the calves were collected and registered. The aim of this study was to estimate genetic parameters for the price per kg, which can be considered as a measure of the quality of IS purebred calves. After data editing, 51,825 records of calves' price sold between 10 to 40 days of age were available. Age at sale, BW of calves, and price per kg were 25.9±6.9 days, 70±9.0 kg, and 5±0.69 €/kg, respectively. The model accounted for the auction date, seller, age at calving of the mother, sex, and age at sale (covariate) as fixed, and for direct and maternal as random effects. Heritability for direct genetic effects was 0.21±0.01. The maternal component explained about 2% and there was no correlation between the two genetic effects. Considering these genetic parameters, a genomic evaluation for the quality of IS based on data from auctions could be feasible.

Effects of undernutrition and hydroxytyrosol supplementation during last third of pregnancy on the immune status of suckler cows and their calves

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We aimed to determine the effect of hydroxytyrosol (HT, antioxidant from olive leaves) on immune status of undernourished pregnant cows and their offspring. From 28th gestation week (w) to calving (w40), 136 cows were allocated to four groups (feeding (100 vs 60% requirements) x HT (Control vs HT, for 0 and 178 mg HT/kg unifeed). Calves were fed dam colostrum and milk. Colostrum samples were collected in Period 1 (0-12h postpartum (pp)) and 2 (12-24h pp). Blood samples were collected in dams (w37 gestation and Period 1) and calves (48h pp and 1 month pp). Immunoglobulin concentrations were determined (Bovine IgG and IgM ELISA, Bethyl, Montgomery, USA). Data were analysed with a mixed linear model with feeding, HT, gestation week and dam age as fixed effects, and dam as random effect. IgM and IgG in cows (plasma and colostrum) and offspring (plasma) were not influenced by feeding level. HT inclusion (HT vs Control) increased colostrum Ig in Period 2 (2.1 vs 1.5 ng/mL for IgM; 73.6 vs 56.4 ng/mL for IgG; $P<0.05$). Dam age (< 10 vs. >10 year old) affected dam Ig (2.2 vs 1.8 ng/mL IgM, $P<0.05$; 20.9 vs 27.2 IgG; $P<0.001$) and calf IgM (0.5 vs 0.4 ng/mL, $P<0.05$). Ig decreased throughout the study ($P<0.001$): from w37 to calving in dam plasma IgG; Period 1 to 2 in colostrum (IgM, IgG); 48h to 1 month pp (IgM, IgG) in calves. In short, HT inclusion increased IgM and IgG in colostrum in Period 2, being a strategy to avoid critical Ig decrease in colostrum during the first hours after calving and ensure optimal transfer of passive immunity from dam to calf. Funded by PID2020-113617RR-C21 FETALNUT. Research group A25-23R.