THE QUALITY OF FROZEN-THAWED SEMEN OF YOUNG A.I. BULLS AND ITS RELATION TO THE GRADE OF HOLSTEIN GENES AND FERTILITY

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Abstract. The aim of the current study was to investigate relationships between the grade of Holstein genes and sperm motility, membrane integrity, membrane lipid architecture status and mitochondrial membrane potential in frozen-thawed (FT) semen, collected from Estonian Holstein (EHF) dairy bulls. Nineteen ejaculates from seven young (age from 14 to 22 MO) EHF bulls were examined for motility using a computer assisted motility analyzer (CMA), hypo-osmotic swelling (HOS). Membrane lipid architecture status (Merocyanine 540 staining) and mitochondrial membrane potential (Mitotracker Deep Reed 633 staining) was assessed by flow cytometry (FCM). Fertility results were available as 60 days non-return rates (NRR). The results showed that there was a significant difference in the incidence of general motile (GMot) and progressively motile spermatozoa (PMot), viable sperms with stable membrane (LSM) and high mitochondrial activity (MTDR-H) between the bull groups with the different grade of Holstein genes at batch level. The positive correlation between PMot, LSM, MTDR-H and NRR was recorded at batch level ($P<0.05$). The strongest correlation was obtained between the curve line velocity (VCL) and NRR at bull level ($P<0.01$). A strong positive correlation was found between predicted non-return rates (PNRR) and NRR ($P<0.001$).

Keywords: dairy bull, grade of Holstein genes, semen quality.