The present study was conducted to determine some environmental factors affecting birth weight, weaning weight and daily live weight gain of Holstein calves of a livestock facility in Izmir, Turkey. The data on 2091 calves born between the years 2005-2010 were used to assess the relevant parameters. Effects of calving year, calving month, calf gender and the interaction between calving year and calving month on calves’ birth weights were highly significant. The overall mean of birth weights was 39.6±0.15 kg. In addition, effects of calving year, calving month, gender, birth weight, weaning age, calving year x calving month, calving year x gender and calving year x calving month x gender interactions on weaning weight (WW) and daily live weight gain (DLWG) were highly significant. The overall means of WW and DLWG were respectively found to be 79.7±0.20 kg and 525±2.5 g. A one kilogram increase in birth weight resulted in an increase of 0.89 kg in weaning weight and a decrease of 1.26 g in daily live weight gain. Prenatal temperature-humidity index (THI) affected birth weight of calves (R²=0.67). Increasing THI from 50 to 80 resulted in 3.8 kg decrease in birth weight. Keywords Calf; Birth weight; Weaning weight; Holstein; Temperature humidity index