THI effect on the frequency of medical treatments of dairy cows in Central Europe

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Introduction
Heat-stress has a significant impact on milk yield, fertility and health of lactating dairy cattle (Kadzere et al., 2002). The temperature-humidity index (THI) as a combination of temperature (T) and relative humidity (RH) is widely used to evaluate heat-stress, while the no. of medical treatments (MT) can be used as an indicator for health. The aim of this study was to estimate the effect of the THI on the incidence of MT in dairy cows in Central Europe.

Materials and Methods
• Climate data (hourly T and RH) obtained from weather stations for the years 2003 and 2005
• THI = \( (1.8 \times T + 32) - (0.55 - 0.0055 \times RH) \times (1.8 \times T - 26) \) (NRC, 1971)
• THI divided into 4 classes: < 40, ≥ 40 to < 50, ≥ 50 to < 60, ≥ 60
• Eight Holstein-Friesian herds (55 – 170 cows), loose-housing systems, Lower Saxony, Germany
• Records of all MT, divided into diagnostic cluster: metabolism, udder, fertility, foot/leg (antiparasitics, antibiotics for dry cow therapy and vaccinations excluded)

Results and Discussion
THI values average was 49.5 (± 12.1) in 2003 and 49.9 (± 10.9) in 2005, respectively. Maximum values were > 60 °C threshold for heat stress in dairy cows (Brügemann et al., 2011). The monthly maximum THI was 73.9 in 2003/8 and 72.2 in 2005/5, whereas the minimum was 10.2 in 2003/1 and 18.5 in 2005/3.

In tendency the incidences of metabolic treatments were higher in summer, while udder treatments had the highest occurrence in winter and the lowest in summer (p > 0.05).

Conclusion
Climatic conditions exceeded the heat-stress threshold for dairy cows during summer. However, there were no significant effects of heat-stress on the incidence of medical treatments of dairy cows.