Comparison of the welfare of beef cattle in housed and grazing systems: hormones, health, and behaviour

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Supplement A – Weather patterns

Ambient weather (temperature, relative humidity, wind speed, solar radiation) was recorded at 15 min intervals by a weather station located approximately 1.6 km SE of the barns, adjacent to the fields grazed by the HG herd (Figure A). Temperature and relative humidity were recorded within the HH herd’s barn. For both ambient and barn conditions, the adjusted temperature humidity index (THI) was calculated (Equation A) (Mader et al., 2006).

Equation A - Formula for temperature humidity index (THI) where: *T* = air temperature (°C), *RH* = relative humidity (%)

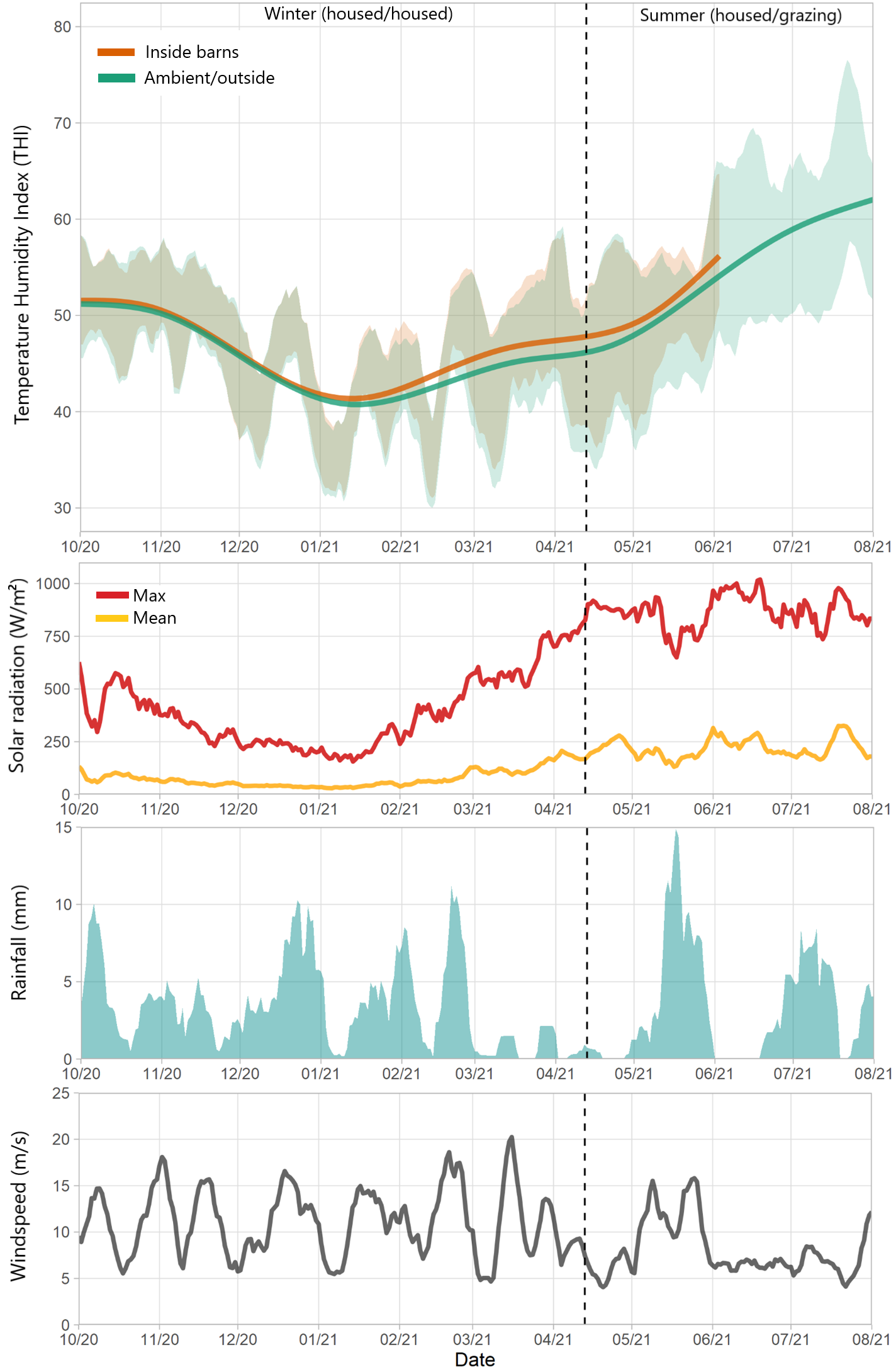


Figure A - Weather data covering the experimental period. The vertical dashed line represents turnout date for the HG herd. **Top**: Temperature Humidity Index (THI) scores for both inside (HH line, higher) and outside (HG line, lower) the barns. Lines represent daily means with a generalized additive model (GAM) applied. Shaded areas represent a 7-day rolling average of maximum and minimum daily THI. **Top-middle**: Solar radiation (W/m2). The line (top) represents a 7-day rolling average of maximum solar radiation whilst the orange line (bottom) represents a 7-day rolling average of mean solar radiation. **Bottom-middle**: Total rainfall per day (mm) on a 7-day rolling mean. **Bottom**: Windspeed (m/s) on a 7-day rolling mean.