Cold markedly influences milk yield of Sardinian dairy sheep farms

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ABSTRACT

The effects of cold stress on milk production have been widely examined in cattle and goats but little studied in dairy sheep. For this reason, the milk production of 10 dairy sheep farms, located throughout the Sardinian island, was analysed in relation to winter and early-spring meteorological conditions. From January 1st to March 31st, in 2003 and 2004, bulk milk production data were collected every 48 hours. From January 15th to April 30th of the same years, bulk milk production was also measured daily in five out of the ten studied farms. During the same periods, meteorological data were collected from stations of the Weather Forecast Service of Sardinia located near the farms. To determine the effects of meteorological conditions on milk yield, analysis of variance using the SAS (SAS Institute Inc., Cary, NC, USA) mixed procedure was performed. The results showed that minimum and mean temperatures, as well as number of hours under a critical threshold temperature (-3 °C, 0 °C and 3 °C), influenced milk yield, with a progressive decrease in milk yield as unfavourable cold conditions increased. In particular, as minimum temperatures decreased from the optimal values of 9-12 °C down to -3 °C, milk yield decreased by 25% (0.30 kg/d per head), with relevant decreases as temperatures went below 0-3 °C. In addition, in the daily dataset decreases up to 30% (0.40 kg/d per head) in milk yield occurred, as mean temperatures went below the optimal values of 15-18 °C. Other factors such as maximum temperature, wind speed, rainfall, relative humidity, Wind Chill Index (WCI) and number of hours under 7 °C and 10 °C did not significantly influence milk yield. The only interaction that significantly influenced milk yield was that between wind speed and number of hours under -3 °C. In fact, in particularly cold days, wind increased animal discomfort, thus negatively influencing milk production. Non significant variations occurred between the two years studied, while production differed significantly among farms, probably due to differences in their managerial techniques. In conclusion, cold stress can markedly decrease milk yield of dairy ewes even in Mediterranean climatic conditions.

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