

12. Smart use of accelerometer data to manage heat stress, health and performance of dairy cows

Lianzhe Shi^{1*}, Akke Kok¹, Bas Kemp¹, Ariette van Knegsel¹

¹ Adaptation Physiology group, Wageningen University & Research, The Netherlands

- Corresponding author. E-mail: lianzhe.shi@wur.nl

With increasing herd size, it is a challenge for dairy farmers to manage large dairy herds with traditional management. Meanwhile, dairy farms increasingly use sensors for estrus detection, that also monitor behavior. Cow behavior could be a relevant indicator for cow health and welfare, which could be used to help farm management. However, using this data for monitoring requires understanding and recognizing behavioral patterns. Cow behavioral patterns follow a 24-hour cycle determined by management, climate, health and fertility factors. This PhD project focuses on systematically quantifying herd and individual 24-hour behavior patterns of dairy cows using accelerometer data from commercial dairy farms. This project consists of two main complementary approaches. In the first approach, the 24-hour lying and activity patterns of the dairy herds will be quantified and associated with micro-climate and productivity. In the second approach, 24-hour individual cow patterns will be quantified, as well as their relation to the herd pattern and their fluctuations over time. These individual patterns will be related to health, individual stressors, and productivity of individual cows. The associations between behavior patterns and health, welfare and productivity can be used to optimize management and animal welfare for dairy herds and individuals, and at the same time reduce labor costs.