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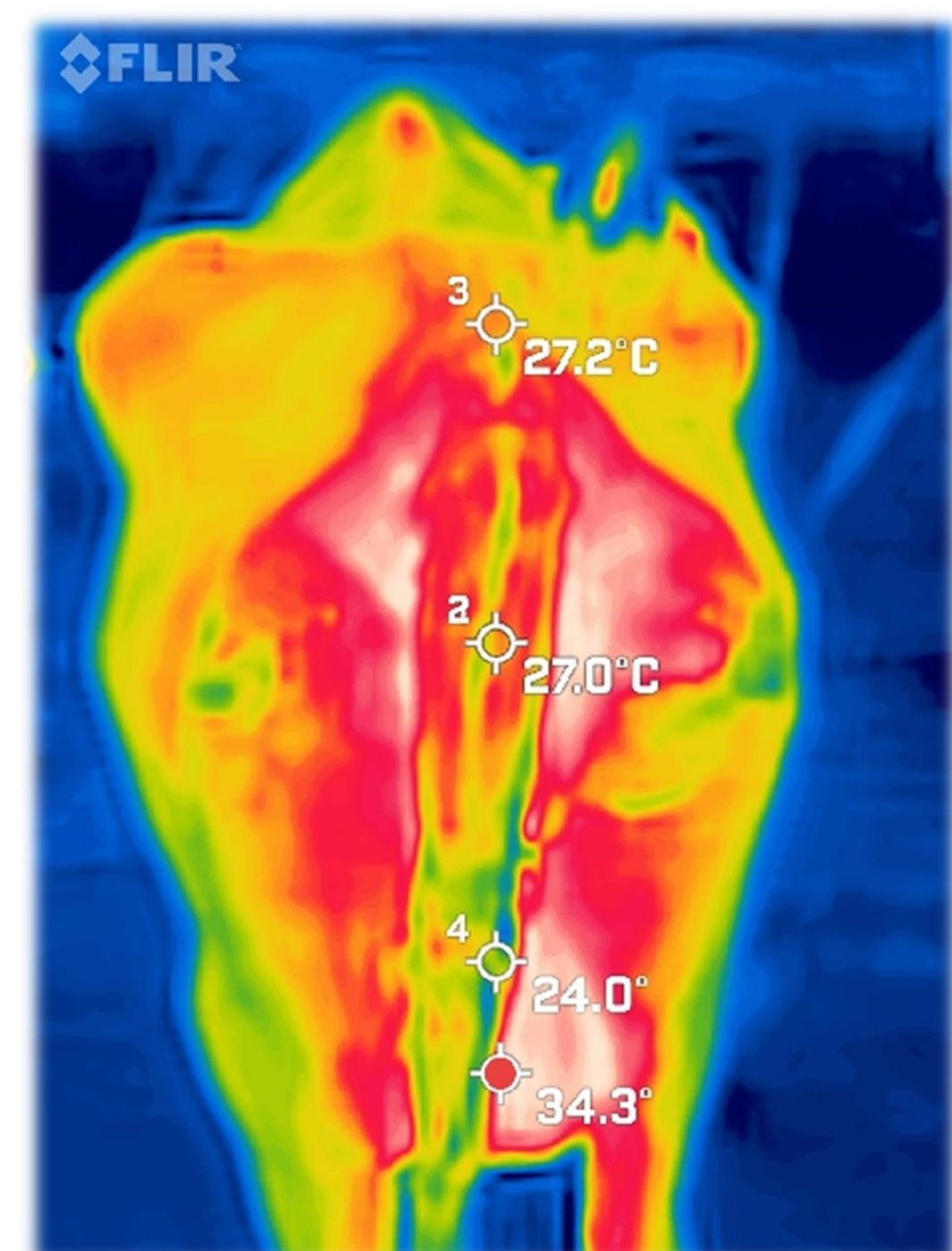
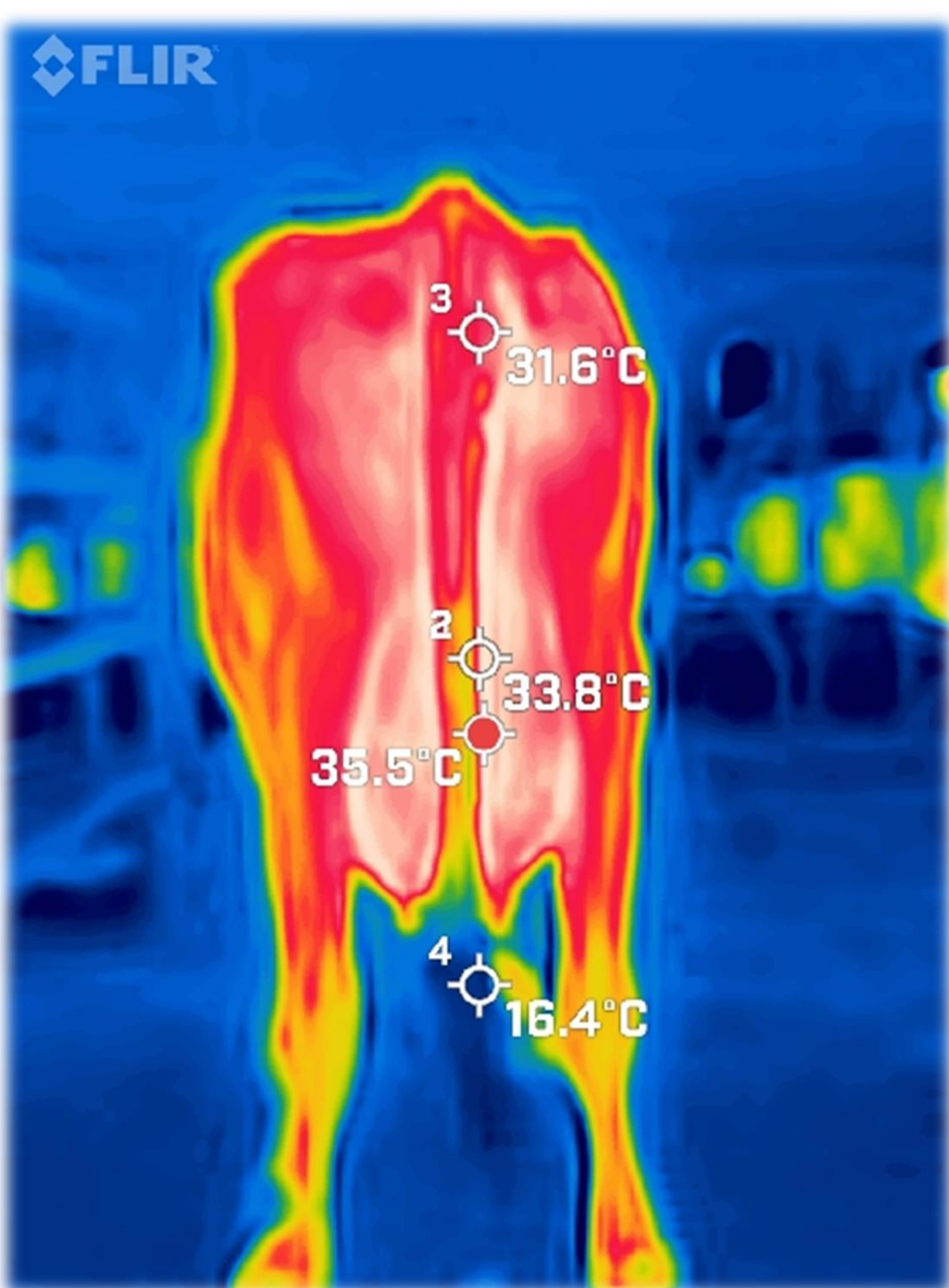
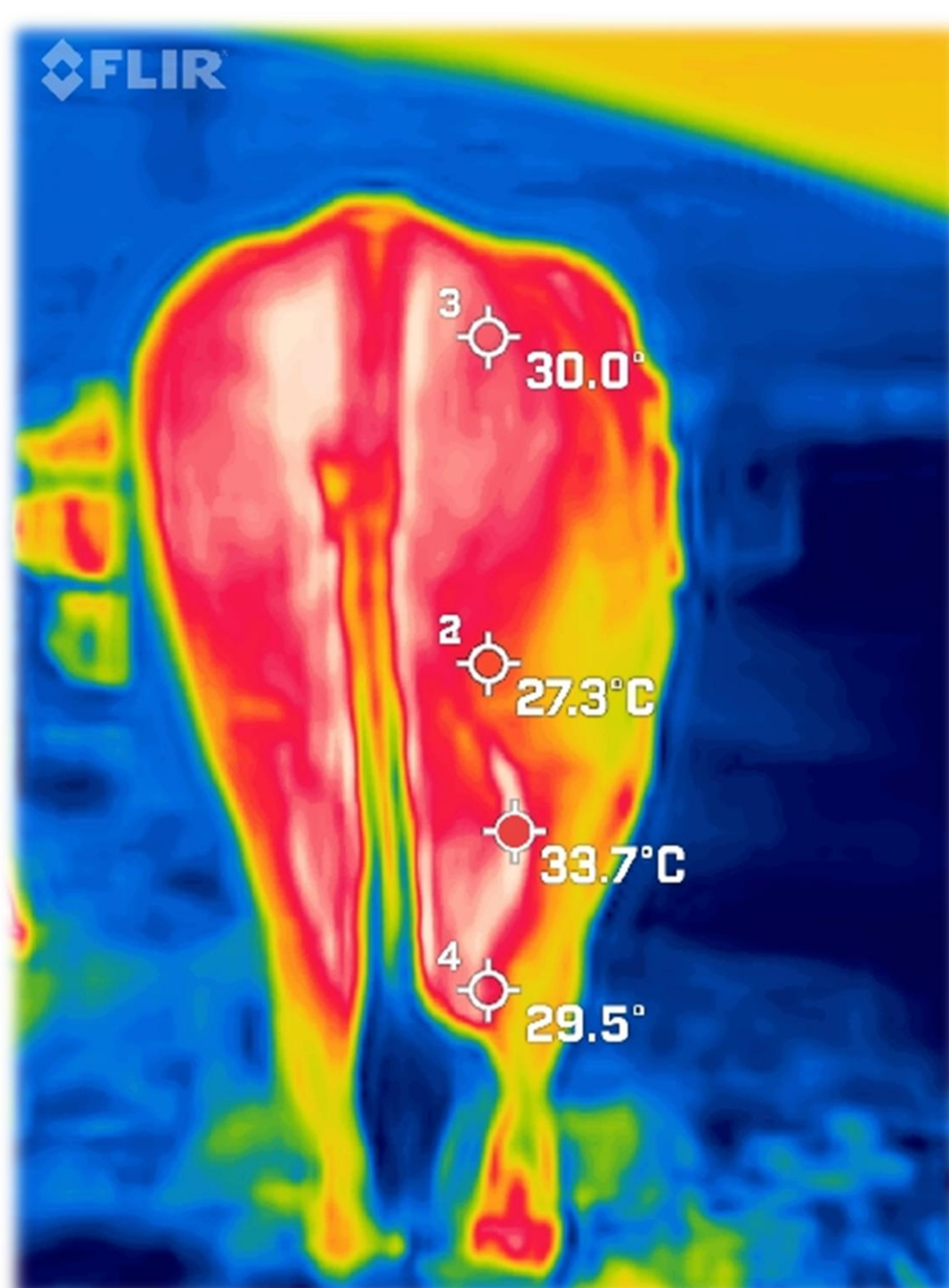
New perspectives on body condition scoring used as a tool in dairy cattle management

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Abstract Optimal metabolism of lipid and amino acids in dairy cattle is essential to overall health, efficiency, production and longevity. The dairy cow frequently experiences periods of high metabolic demand, and the overall efficiency of these animals depends on the proper management of body fat. The need of effectively controlling body fat and amino acids resulted in the development of the "body condition score," a system for assessing body fat and, to a limited extent, muscle tissue, and is an evaluation acknowledged by animal scientists and farmers as being a simple technique that can significantly contribute to good husbandry and management of dairy cattle. Assessing the body condition of dairy cows through the BCS system is a management tool used to maximize milk production and improve the efficiency of reproductive activity, allowing at the same time to reduce the incidence of metabolic diseases and diseases associated with parturition. Body condition score might also be a reliable indicator of animal welfare, although further research is needed to establish how BCS changes are influenced by the cow's comfort. Traditionally, estimation of BCS is made by observing and touching cow. Over the past few years, automated BCS methods have been developed for efficiency and repeatability, with a more reliable, less time-consuming means of estimating energy reserves in animals. Using technology to design management based on the variability in individual animal responses has the potential to increase efficiency and make interventions for animal welfare more effective. Precisely speaking, precision livestock farming (PLF) is the application of technology to measure and manage livestock at the individual animal level in real time in order to maximize the contribution to production.

Results and discussions Body condition is a major part of the overall food intake, production, and health system. Many of the problems associated with milk production in early lactation are a result of rapidly changing feed intake as well as the starting body condition. Cows with excessive body fat during late pregnancy or those that gain a large amount of fat during late pregnancy usually eat less feed than animals that maintain "body condition" during this time. This reduction in feed intake from the expected rate (to meet milk production and other requirements) can result in decreased rates of milk production and increased incidences of postpartum metabolic and reproductive diseases.

Conclusions The data provided by these new technologies can provide previously unavailable, consistent, objective measures for traits that have traditionally been difficult to measure. Subjective systems, such as body condition scoring and locomotion scoring, may be assessed objectively with precision dairy monitoring systems. It is hoped that economical use of digital imaging can increase the adaptation and use of BCS to improve overall dairy efficiency.

