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Potential of connected devices to optimize cattle reproduction

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8 Estrus and calving are two major events of reproduction that benefit from connected devices  
9 because of their crucial importance in herd economics and the amount of time required for  
10 their detection. The objectives of this review are to: 1) provide an update on performances  
11 reached by sensor systems to detect estrus and calving time; 2) discuss current economic  
12 issues related to connected devices for the management of cattle reproduction; 3) propose  
13 perspectives for these devices. The main physiological parameters monitored separately or in  
14 combination by connected devices are the cow activity, body temperature and rumination or  
15 eating behavior. The combination of several indicators in one sensor may maximize the  
16 performances of estrus and calving detection. An effort remains to be made for the prediction  
17 of calvings that will require human assistance (dystocia). The main reasons to invest in  
18 connected devices are to optimize herd reproductive performances and reduce labor on farm.  
19 The economic benefit was evaluated for estrus detection and depends on the initial herd  
20 performances, herd size, labor cost and price of the equipment. Major issues associated with  
21 the use of automated sensor systems are the weight of financial investment, the lack of  
22 economic analysis and limited skills of the users to manage associated technologies. In the  
23 near future, connected devices may allow a precise phenotyping of reproductive and health

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