

SUMMARY OF THE RESULTS OF 638 ATP BIOLUMINESCENCE TESTS TO MEASURE PIG FARMS CLEANLINESS

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ATP (Adénosine TriPhosphate) bioluminescence method is a pedagogical tool for on-farm rapid assessment of surface cleanliness. The aim of this study was to summarize the results of 638 ATP bioluminescence tests.

MATERIAL AND METHODS :

638 ATP bioluminescence tests were done during 76 disinfection controls in 41 farms. 56% of the samples were done in farrowing units, 19% in post weaning units and 25% in fattening units.

Tests were done after disinfection in dry rooms by swabbing an area of 10 cm x 10 cm and were tested for microbial contamination level using an ATP bioluminescence meter NGi 3M™ Clean-Trace™ (Relative Light Unit = RLU). Sampling sites were feeding and drinking areas, floor, wall over 1,5 meters and wall at animal height.

RLU values were converted in an index (note 1 [low RLU value] to 4 [high RLU value] adapted from Corrégé¹) for each sampling site. An average of the indexes gave a score per farm. This score was then converted to a global evaluation index (Good – Average – Bad, adapted from Corrégé¹).

Statistical analyses were done with R 4.2.0 using non-parametric tests or fisher tests.

RESULTS :

35% of the controls had a good global evaluation index, 34% average and 31% bad. The average ATP index was higher in fattening units than in farrowing and post weaning units, Figure 1 (p<0,001).

This index was higher in drinking and feeding areas than on the floor and on the walls, Figure 2 (p < 0,001). It was also higher for concrete and metal surfaces (2,4) than for plastic surfaces (1,8, p < 0,001).

94% of the farms used detergent in farrowing unit versus 69% in post weaning unit and 35% in fattening unit. ATP index was lower with detergent than without, Figure 3 (p<0,001). With a detergent 42% of the controls had a good global evaluation index, 35% average and 23% bad while without detergent 11% of the controls had a good global evaluation index, 45% average and 44% bad, Figure 4.

DISCUSSION AND CONCLUSION :

Our results agreed with those obtained by Corregé et al¹. They confirmed the interest of using a detergent to improve disinfection quality. The lower frequency of use of a detergent combined with more concrete surfaces in fattening unit may explain worse ATP results in this unit.

REFERENCES
 1. Corrégé I, Araujo CDA, Roux AL. Mise au point d'un protocole de contrôle du nettoyage et de la désinfection en élevage porcin. JRP 2003;(35):419-26

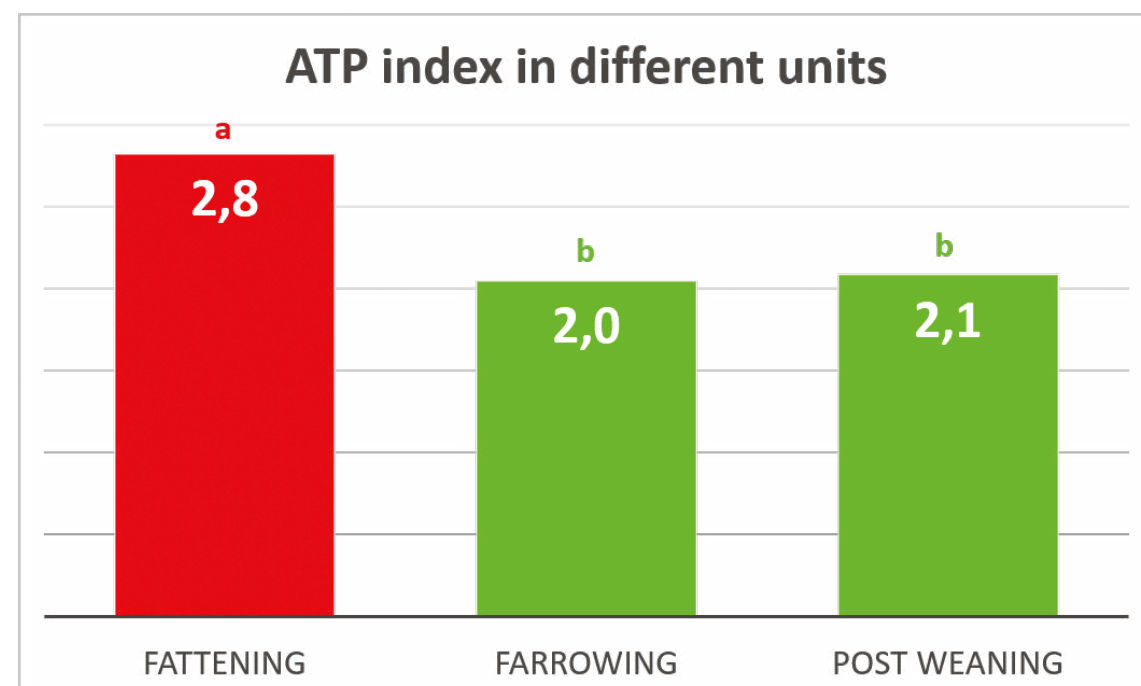


Figure 1 : ATP index in different units
 Different letters indicate a significant difference (p value < 0.001)

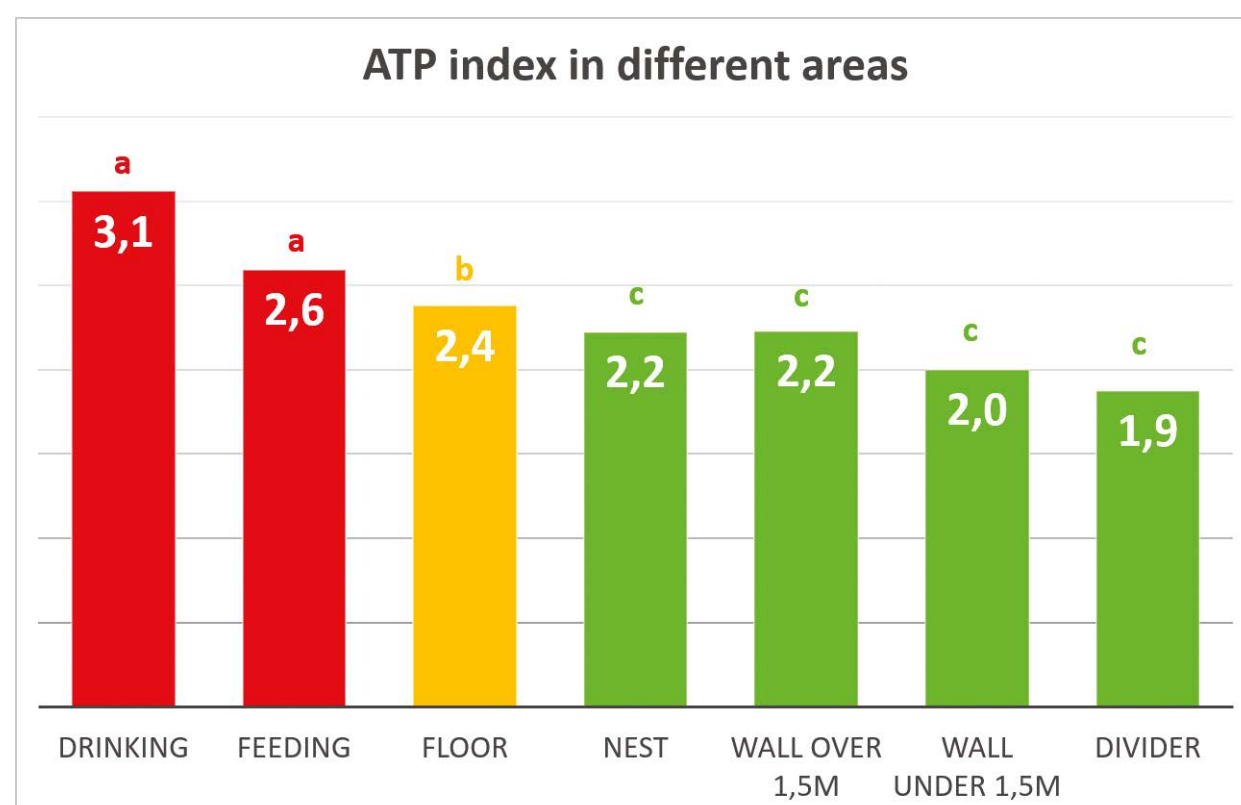


Figure 2 : ATP index in different areas
 Different letters indicate a significant difference (p value < 0.001)

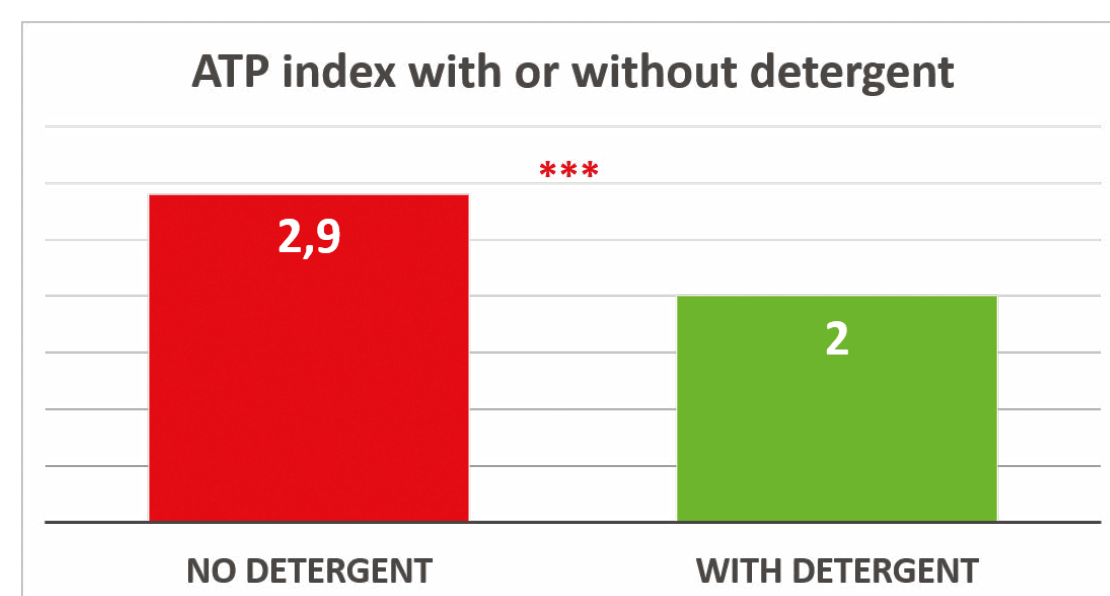


Figure 3 : ATP index with or without detergent
 Significance: *(P < 0.05); ** (P < 0.01); *** (P < 0.001)

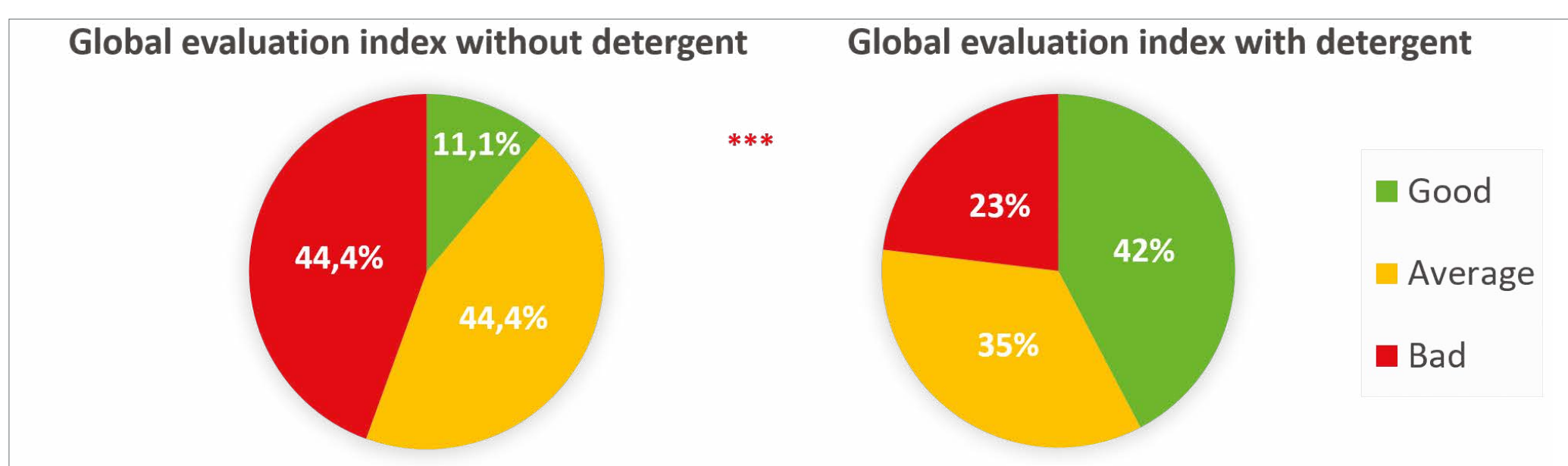


Figure 4 : Global evaluation index with or without detergent
 Significance: *(P < 0.05); ** (P < 0.01); *** (P < 0.001)

