

Alternatives for conventional sanitization of cutting tools in slaughterhouses and meat processing plants during production

Lambrecht E.^{1*}, Rasschaert G.¹, Van de Walle A.¹, Willems S.¹, Goeteyn J.¹, De Vlam S.¹, Van De Walle K.¹, Lagamme C.², Korsak N.², De Zutter L.², Daube G.², De Reu K.²

¹: FLANDERS RESEARCH INSTITUTE FOR AGRICULTURE, FISHERIES AND FOOD – TECHNOLOGY AND FOOD UNIT

²: LIEGE UNIVERSITY, FACULTY OF VETERINARY MEDICINE

AIM + WHY

- EU regulation 853/2004: disinfection of cutting tools **during production** with $\geq 82^\circ\text{C}$ hot water, no contact time specification.
- Drawbacks hot water: high energy consumption, temperature control issues, blunt knives and condensation.

AIM → Assess microbiological reductions from varying hot water temperature/contact time & alternative chemical sanitizers.

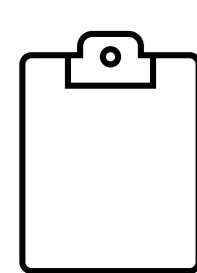


HOW

- **Developing standardized lab protocol** for screening knife sanitization
- **Testing** sanitization in lab: 5-10 replicates, realistic contact times (processing speed)
 - Immersion water: [2-30s] @ 70°C , 75°C , 80°C , 82°C
 - Spraying 120 ppm chlorine: 8s @ 15°C or 46°C
 - Immersion 5% lactic acid: 5%: [2-10s] @ 4°C , 15°C or 45°C
 - Immersion commercial peracetic acid product: [5-30s] 2°C , 15°C , 25°C
- **Verification** best methods in slaughterhouse. According to FASC circular letter PCCB/S3/1123560/2.2

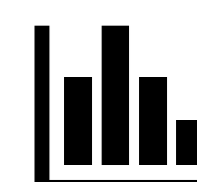
- 1 year project RT24/08 MICMEATOOL
- 1708 cutting tools samples
- 13 slaughterhouse/cutting plant visits
- 9052 agar plates
- ♥ 2 teams of microbiology enthusiasts (ILVO, ULiège)

RESULTS



Standardized lab screening protocol

- Soiling (feces/meat), sanitization and sampling is reproducible
- Protocol can be used in future testing for sector



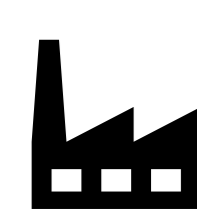
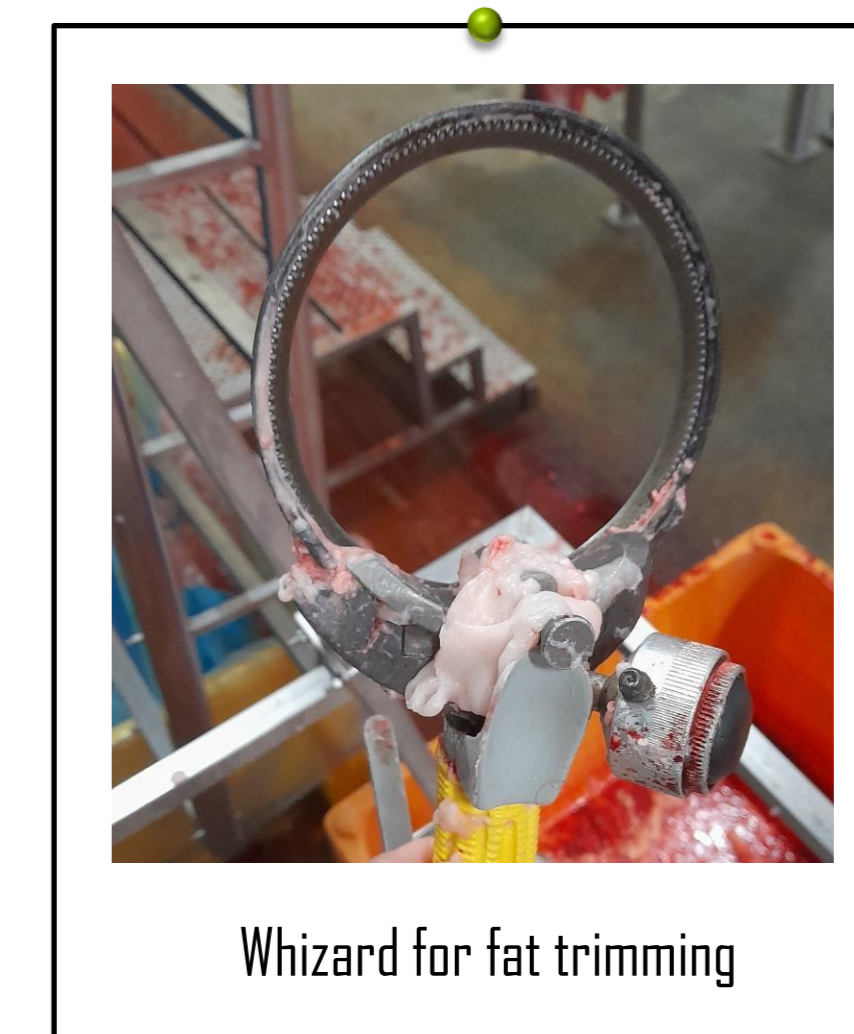
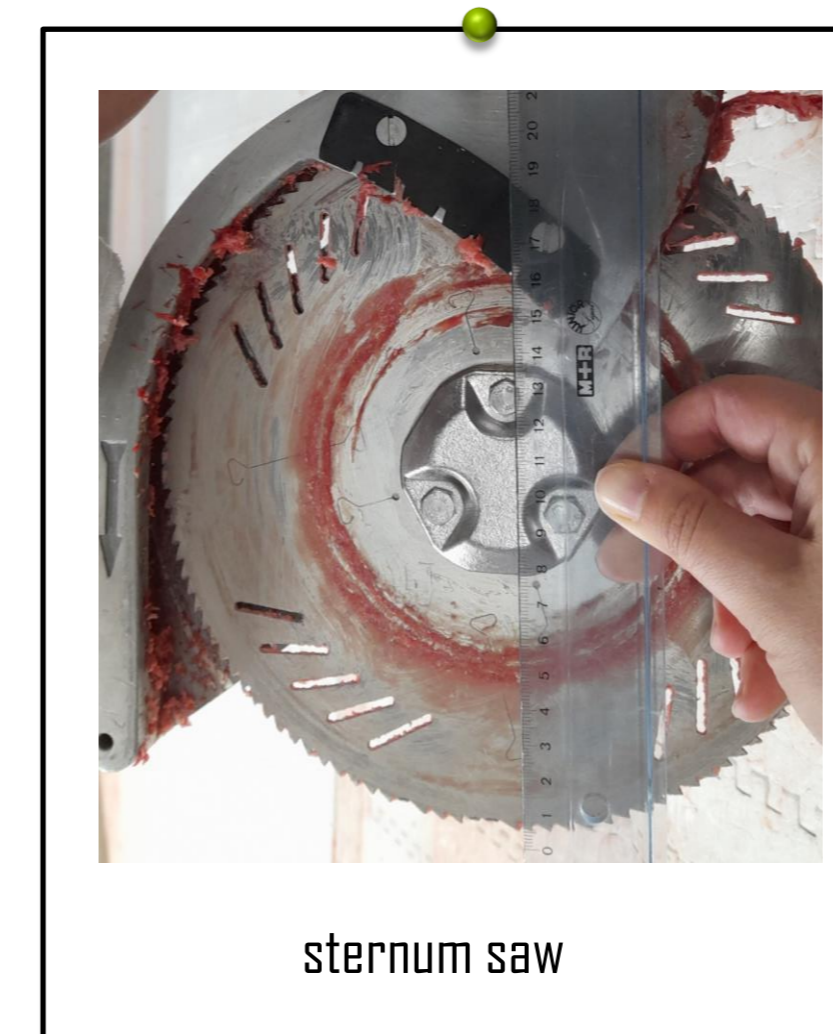
Lab test sanitization methods

Alternatives for 2s immersion in 82°C water (eg pig slaughter):

- Immersion $\geq 5\text{s}$ in hot water at 75°C ,
- $\geq 5\text{s}$ in 5% lactic acid at [$15 - 45^\circ\text{C}$]
- $\geq 15\text{s}$ in 0.16% commercial peracetic acid product at [$2 - 25^\circ\text{C}$]

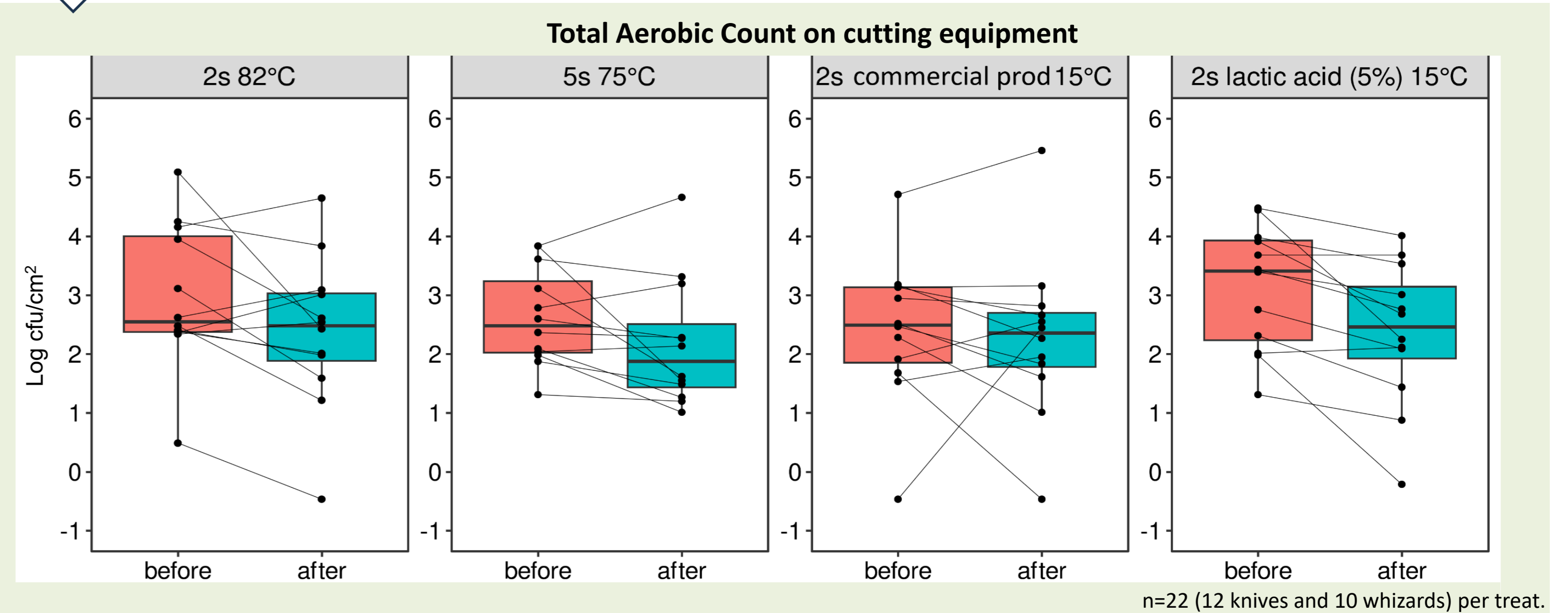
Alternatives for 10s immersion in 82°C water (eg cutting plants):

None of the tested conditions equalled 10s immersion in 82°C hot water !



Slaughterhouse verification test

- Immersion **2s in hot water at 82°C** (ref. method) did **NOT** result in significant reduction of Total Aerobic Count or Enterobacteriales.
 - Other methods also showed **no sign.** reduction:
 - 5s in 75°C water
 - 2s in 0,16% commercial product with peracetic acid
 - 2s 5% lactic acid
 - Due to short contact times and presence of 'dirt' (blood, fat) ?
- No significant differences between the tested methods → all tested conditions equal 2s 82°C sanitization.



Conclusion & recommendations

- Slaughterhouse verification: **equal**, limited sanitization effect for all tested conditions: immersion 2s 82°C water, 2s 75°C water, 2s 5% lactic acid and 2s 0,16% commercial product.
- Overall, longer contact times and prerinsing are recommended (first clean then sanitize principle)

Need extra information/results or interested in testing?



ellen.lambrecht@ilvo.vlaanderen.be

This research was performed within the framework of the FOD RT24/08 MICMEATOOL project