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The objective of this study is to compare cleaning with a medium-pressure nozzle (Fitjet® nozzle, 40 bars) to a conventional cleaning with a high pressure (rotary nozzle, 160 bars).

Material and methods

- The two modalities of cleaning were compared in farrowing, post-weaning and fattening rooms.
- The work time and water consumption allows us to **calculate the cost** of the operations.
- The **effectiveness** of the cleaning and disinfection is assessed by visual semi-quantitative scoring with paper roll and Total bacteria counts in Petri dishes.
- **Evaluation of the hardness of the cleaning by:**
 - Measurement of noise and visibility
 - Specific questionnaire developed
 - Observations by an ergonomist



Results

- **Cost:** the costs of the cleaning with both nozzles are similar (profit of 0.49 € per productive sow and per year with the Fitjet® nozzle)
- **Cleaning and disinfection efficiency:** the results obtained are not significantly different between the two nozzles
- **Hardness of the cleaning:**
 - the working times with both nozzles are similar,
 - the noise level is significantly lower with the Fitjet® nozzle,
 - the visibility during washing is significantly higher with the Fitjet® nozzle,
 - musculoskeletal disorders are lessened, projections toward the operator's face are significantly reduced and cleaning is considered less painful and less tiring for the operator.
 - the ergonomist noticed a decrease in the mist produced, the vibration effects and jerks experienced by the operators with the Fitjet® nozzle.

Comparison of the costs

Difference Fitjet® - Rotary nozzle	Water	Time	Cost
Per sow/year	4 l/+0%	-3 min/-1%	-0.49 €/-1%

Table 2 - Noise measurement (in decibels)

Difference Fitjet® - Rotary nozzle	Fitjet®	Rotary nozzle	Stat
Noise in dB	86.6	93.3	p<0,001
Visibility: % of visible squares	96.0	97.7	p<0.01
Visual semi-quantitative scoring	1.76	1.83	ns
Total bacteria counts	1.93	2.10	ns

Conclusions

With the Fitjet® nozzle the water consumption, the working time and the cost are similar to those generated by high pressure (rotary nozzle) for the same washing efficiency.

Concerning the hardness of work, it leads to improved visibility, reduction of noise, projections, postural constraints and perceived pains.