ZOONO® ANIMAL HEALTH

MEASUREMENT SCALES, TECHNIQUES, SCALE AND VALUES

NG

ents were realized with ATP testing
e measurement units are in RLU that is not a
it of measurement. It depend of the
ems, sensitivities, reagent formulations and
systems.
different for each system. The most relevant
easurement is not the absolute value but the
ison, between sheds and on time.

SCALE

RLU scales are different for each system. Each manufacturer sets their own value for 1 light unit and all measurements are made relative to that value. The scale defined by the manufacturer of the used equipment is:

0 - 30	Considered Food Safe
31 - 100	Considered clean
101 - 200	Caution!
201 - 500	Contaminated
501 - 1000	High Risk of Infection
1000 +	Extreme Risk of Infection

VALUES

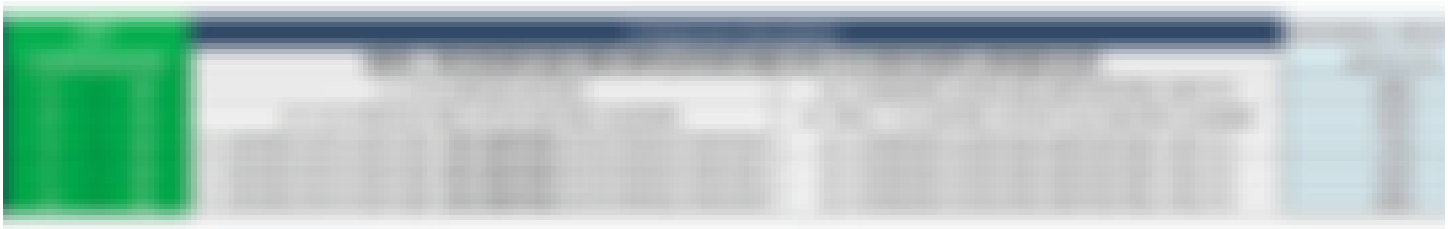
Average value: For each shed and for each me
moment, was obtained an average RLU value
average value of the two mid points from the s
goal is to reduce the outliers.
Relative difference: The relative comparison b
obtained by calculation of the ratio in percenta
average value obtained for each shed in the sa

EUROPEAN HATCHERY STUDY

STUDY 1

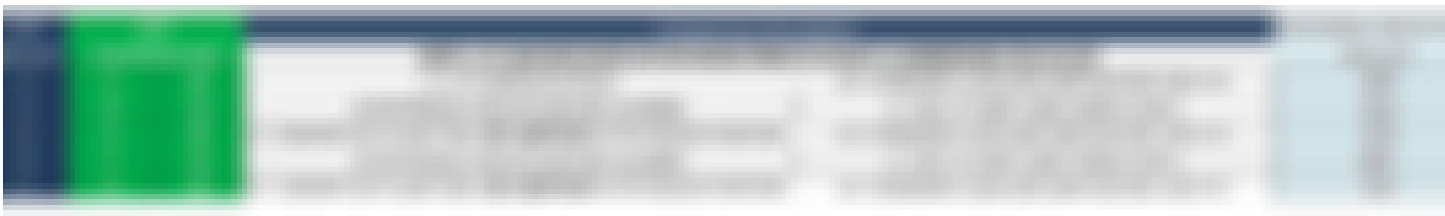
COMPARATIVE RESULTS FOR MICROBIAL READINGS

Study 1 proved that the Z-71 coating reduced the microbial levels in the separation room between 63 – 89% in comparison to normal sanitisation.



y recorded microbial levels after each production run, the room had been recoated with Z-71 on the 4th December in preparation for further production rur
sanitisation between runs

COMPARATIVE STUDY MICROBIAL READINGS

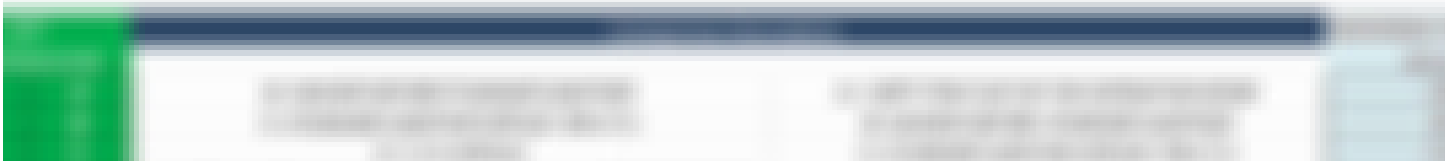


The results below prove the advantages of ZOONO coatings compared to sanitisers previously used:

- The microbial reduction in the separation room over 3 production runs averaged 78.6% by replacing normal sanitisation with z-71 technology
- Z-71 is water based and environmentally friendly, SANITISERS are toxic and only effective in their wet phase when applied. Z-71 is effective in its initial wet phase and becomes more effective when it dries and forms a bonded coating on all surfaces it makes contact with.
- Replacing normal SANITISATION with Z-71 has proven that a single application is still effective over multiple production cycles. It is recommended that it be applied once every 14 days or after every 3rd production cycles whichever occurs first.

HATCHERY TRAY RESULTS

COMPARATIVE RESULTS FOR MICROBIAL LEVELS



› dirty trays were randomly selected prior to washing, these trays were marked with red tape for the purpose of identifying once back in the production cycle

RESULTS

Prior to Z-71 coating, the dirty trays were washed with detergent and the microbial load dropped by 78%

1. The trays were then sanitised (C) and results compared to (b) washed trays. Only a 1% reduction. Results show that the sanitiser did not improve the microbial level on the trays.
2. The trays were coated with ZOONO (D) and readings compared to (C), results showed a further improvement of 70% reduction to standard sanitisation.

The incubation / hatchery trays spend at 21 days in process enduring temperatures upwards of 36 degrees, it is our opinion the residual presences of ZOONO for sustained periods is likely to improve the percentage of chicks hatched.

The trays would not require any further sanitisation, the washing process is all that is required with a ZOONO coating to the trays after each hatching cycle.

HATCHERY ROOM

Two rooms were selected for the study, the untreated shed was cleaned and sanitised according to normal process, the treated shed had no sanitisation and was just washed out after the production cycle.

- Room 26, the shed to be treated was carrying a higher pathogen load compared to room 27 being the control shed.

- Room 26 was washed with water and detergent only, no sanitiser, the ATP reading showed a 98% reduction in pathogen levels.
- Room 26 was visibly dirtier than room 27 being the control shed and showed a slightly higher pathogen level by 15%.
- The treated room 26, was washed with no sanitiser and the control room 27wash washed sanitised as normal. The results showed a reduction of 73% compared to the control shed which was washed and sanitised with normal protocols. This will be due to the bonding process of Z-71 improving over time and the readings were taken only 3 days apart.
- Room 26 average reading was 15% higher than the control shed 27, both sheds were both within the ATP tolerance for food grade.

SUMMARY

- Z-71 is therefore providing a work safe environment when being applied in confined spaces typical of that of a hatchery centre.
- Is environmentally friendly and its rated toxicity is equal to that of a cup of coffee.
- An application is only necessary up to every 30 days however it is recommended in areas of high microbial sensitivity such as hatcheries and processing plants that is be applied every 14 days or end of each cycle which every comes sooner.
- The residual bonding on Z-71 and killing by physical method of action means that the pathogens can not become immune to it unlike traditional sanitisers that rely on poisoning of the pathogen.
- Cleaning time for each area of the hatchery factory is reduced as Z-71 is not applied every cycle unlike traditional sanitising.