

Zoötechnisch centrum, ZTC, KU Leuven

Bijzondereweg 12

3360 Lovenjoel

## **Broiler experiment**

### **Harteel ultrasonic disinfecter**

#### **Introduction**

There is increasing interest in the hygiene of drinking water for broilers in function of health and animal welfare and reduced use of antibiotics linked to better technical and financial results for the industry.

Harteel BVBA worked primarily with Harsonic to build an ultrasonic disinfecter that was provided to the ZTC for the initial purpose of measuring the drinking water quality differences with and without using the device

#### **Experimental design**

Two 1m<sup>2</sup> pens were set up and provided with wood shavings, each with 2 Valco nipples and feed trough, of which pen 1 was equipped with the device, and pen 2 was not. A commercial feed was used: start (0-14 days), growth (14-35 days) and finish (35-42 days). Density 16 chickens/m<sup>2</sup> Ross 308, hens. Each pen was provided with a 30l supply tank, open to the environment.

Each week, 80-100ml water samples were taken from the nipples, after disinfecting the exterior of the nipples with 80% ethanol. The nipples were sampled manually using a sterile needle. The samples were collected in a sterile receptacle, sealed, and tested for *E. coli*, enterococci and the total aerobic bacterial count.

Feed intake, mortality and growth were also determined.

**Measurements**

*Water samples*

water sample	Harteel disinfector PEN 1			Check		HOK 2
	<i>E. coli</i>	enterococci	tot. aerobic bact. ct.	<i>E. coli</i>	enterococci	tot aerobic bact. ct.
	CFU/ml	CFU/100ml	CFU/ml	CFU/ml	CFU/100ml	CFU/ml
2/01/2013	<10	75	37000	<10	110	43000
26/12/2012	<10	15	6000	<10	25	12000
19/12/2012	<10	10	3000	<10	15	100000
12/12/2012	<10	2	2000	<10	5	100000
5/12/2012	>10	not assessed	98000	>10	not assessed	180000

*Feed intake and weight*

feed intake		
16 hens/pen	pen 1	pen 2
d0-d14	8.1	8.22
d14-d42	73.15	68.58
total	81.25	76.80

live weight		
	pen 1	pen 2
d0	0.72	0.68
d14	6.32	5.90
d42	46.06	43.52

weight increase day 0-42		
	pen 1	pen 2
	45.34	42.84

FCR day 0-42		
	pen 1	pen 2
FCR	1.792	1.793

mortality day 0-42		
	pen 1	pen 2
mortality	0	0
culling 18/12		1 : 0.5kg



### Results and trends

No statistical investigation was conducted as the design of the experiment did not permit this, as a result of which we can only comment on the trends observed.

-microbial investigation of the water samples: there was a very clear reduction of the enterococci as well as the total aerobic bacterial count when the Harsonic ultrasonic disinfectant was used.

-at the end of the study, a clear increase of the total aerobic bacterial count was observed, which can only be attributed to an environmental infection as the supply containers are open to the environment.

-the number of animals is certainly too limited to be able to make statements about the growth, feed intake, FCR and slaughter weight; it was noted that pen 1 with the Harsonic disinfectant had a slightly better FCR and total weight increase.

-extrapolation of these figures to an actual shed with 20,000 chickens: using the Harsonic disinfectant would produce better financial and technical results on the order of €480/installation, which corresponds to €2931/year (investment not included), taking into account a cost price of €485/t for starting feed and €483/t for growth feed.

### Further research

-These results warrant further statistical research.

-In practice, research is certainly required as to the number of metres of drinking water pipe per device installed to determine the action radius of the device.