Brazil: A Study by the University of the West of Santa Catarina

The Universidade do Oeste de Santa Catarina (University of the West of Santa Catarina) reported in 2015 that they did a trial in a self-contained broiler farm in the western part of Santa Catarina, Brazil. The trial involved two houses with broilers of the Hubbard breed. One of them with 6,500 birds served as the test group, while the other with 6,600 birds served as the control group. The drinking water for the test house had added 1 kg BioAktiv Salis-G in 5,000 litres of water, when the broilers were eight days to 45 days old. The drinking water for the control group had no additive.

Before the trial, there was a bacterial epidemic. It stunted the growth of the broilers delaying it by eight days. It also increased their mortality. The trial ended when the broilers were ready for slaughter.

Parameter	BioAktiv	Control	Difference
Final weight (kg)	2.770[a]	2.640[b]	130 g or 5% higher
Feed consumed per broiler (kg)	4.73[a]	5.33[b]	600 g or 11% lower
Feed conversion ratio	1.71[a]	2.02[b]	0.31 or 15% lower
Mortality (%)	3.01[a]	6.06[b]	-3% absolute or -50% relative
Days in house	47	51	4 days or 8% fewer
Production efficiency index[1]	344[a]	244[b]	100 or 41% higher

a,b – statistically significant ($p < 0.05$)

The table above shows the various results of the trial. The broilers fed BioAktiv had higher final weight and better feed conversion ratio than the controls. The main reason was feeding the broilers BioAktiv reduced the ammonia concentration in the house. The better air promoted faster growth of the broilers. They also had lower mortality and higher production efficiency index. They reached the slaughter weight in 47 days, four days earlier than the controls.

[Original report]

[1] See Discussion in page 2.

Discussion

To calculate **feed conversion ratio**, we use the formula below:

$$\text{FCR} = \frac{\text{Feed consumed for the weight gain}}{\text{The amount of weight gain}}$$

Assuming that the initial weight of the broiler was negligible, the FCR formula in this case is:

$$\text{FCR} = \frac{\text{Feed consumed per broiler (kg)}}{\text{Final weight (kg)}}$$

Therefore, $FCR_{BioAktiv} = 4.73/2.770 \approx 1.71$ and $FCR_{control} = 5.33/2.640 \approx 2.02$.

To calculate **production efficiency index**, we use

$$\text{PEI} = \frac{\text{Average daily gain (kg)} \times \text{Survival rate (\%)}}{\text{FCR}} \times 100$$

We can estimate PEI with

$$\text{PEI} = \frac{\text{Final weight (kg)} \times \text{Survival rate (\%)}}{\text{Days in house} \times \text{FCR}} \times 100$$

We have $PEI_{BioAktiv} = 2.770 \times 96.99/47/1.71 \times 100 \approx 334$ and $PEI_{control} = 2.640 \times 93.49/51/2.02 \times 100 \approx 241$. The results are close to the actual ones.