

## Evaluation of Actifor<sup>®</sup> Boost versus monensin on growth performances and carcass yield of beef cattle

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### Aim of the trial

There is a rising concern amongst consumers regarding the use of antibiotics as growth promoters in livestock industry, and the related bacterial resistance that could emerge. Therefore, more natural alternatives are needed.

The purpose of this trial was to assess the effects of the additive Actifor<sup>®</sup> Boost on growth and carcass performance of fattening Bonsmara and cross breed bulls during the finishing phase, in comparison with monensin, an ionophore used as growth promoter in the feedlots' diets.

*Key words: beef cattle, fattening bulls, Bos indicus, ADG, monensin, Actifor<sup>®</sup> Boost*

### Material and methods

120 growing Crossbreed / Bonsmara bulls with an average of 12 months of age, were allocated, according to visual homogeneity and body weight (255kg on average at start), to one of the 3 treatments (40 animals/treatment), in a randomized block design where all treatments were present in each block:

- Control: Control diet + Monensin (28 ppm growing phase / 32 ppm finishing phase)
- Actifor<sup>®</sup>: Control diet + Actifor<sup>®</sup> Boost (3 g/d 1<sup>st</sup> period – 4 g/d 2<sup>nd</sup> period – 5 g/d 3<sup>rd</sup> period)
- 1 other product tested

All the bulls were housed in the same conditions (10 animals/pen in 4 pens per treatment according to the starting body weight), in the same barn. The trial lasted from 5<sup>th</sup> April until August 11<sup>th</sup> (128 days), after an adaptation period of 4 weeks in field with 6 kg of compound feed.

The following measurements were done:

- Individual feed intake → daily
- Individual live weight → at start and at slaughter (slaughterhouse)
- Carcass parameters (carcass weight, carcass yield) → At slaughter

All the bulls received the same TMR, *ad libitum* every day, according to the different phases of the fattening period (see Table 1). All the individual components as well as the TMR were analyzed for analytical values, provided in Table 2.

Table 1. Diet's composition during the trial period in %.

	%
<b>Hominy chop</b>	46.1
<b>Maize meal</b>	20.8
<b>Eragrostis hay</b>	11.2
<b>Eragrostis teff</b>	5.4
<b>Soybean meal</b>	3.8
<b>Sunflower meal</b>	3.5
<b>Wheat bran</b>	3.1
<b>Molasses</b>	3.1
<b>Premix</b>	1.5
<b>Limestone</b>	1.3
<b>Urea</b>	0.9
<b>Salt</b>	0.4
<b>Megalac</b>	0.3
<b>Premix (*)</b>	0.15
<b>TOTAL (%)</b>	<b>100</b>

\*containing monensin or Actifor<sup>®</sup> Boost

Table 2. Analytic values of the TMR during the trial period.

<b>Crude Protein (%)</b>	14.5
<b>Crude Fat (%)</b>	5.7
<b>Starch (%)</b>	40.9
<b>NDF (%)</b>	26.5
<b>PeNDF (%)</b>	15.4
<b>Metabolized energy (MJ/kg)</b>	11.5
<b>Calcium (%)</b>	0.7
<b>Phosphorus (%)</b>	0.32
<b>Magnesium (%)</b>	0.28

Actifor<sup>®</sup> Boost was supplemented in Actifor<sup>®</sup> group according to the body weight. Monensin was also supplemented in function of the TMR according to the body weight in the control group (Table 3).

Table 3. Additives, beta agonist and implants usage.

Dates	5/4/2020- 10/6/2020	10/6/2020 – 8/7/2020	8/7/2020- 11/8/2020
Body weight	250-350	350-400	400-450
Actifor® Boost (g/d) for Actifor® Treatment	3 g/d	4 g/d	5 g/d
Monensin for control group (ppm)	28 ppm	32 ppm	32 ppm
Zilpaterol for both treatment groups			Yes
Implant for both treatment groups	Yes	Yes	

There were no difficulties encountered during the trial.

## Results

Collected data were statistically processed using GLM procedure in SPSS. The fixed effect of treatment and covariable effect of starting body weight were included in the mathematical model.

Results from growth performances are shown in Table 4 and Table 5. The two groups were rigorously similar at the beginning of the trial. None of the measured parameters showed a significant difference between the 2 groups, for the 128-day trial period.

Table 4. Statistical analysis of the groups' growth performances, feed intake and feed conversion rate.

	Control	Actifor® Boost	Actifor® Boost Effect	p-value
Duration (days)	128	128		
Body weight at start (kg)	254	255		
Body weight at slaughter (kg)	450.9	445.2	<b>-5.7</b>	NS
Body weight gain (kg)	194.6	191.1	<b>-3.5</b>	NS
Average Daily Gain (kg/day)	1.52	1.49	<b>-0.03</b>	NS
Feed intake (kg DM/day)	10.34	10.72	<b>+0.38</b>	NS
Feed Conversion rate	6.59	6.98	<b>+0.39</b>	NS

Table 5. Statistical analysis of the groups' growth performances (animals average), feed intake and feed conversion rate (average of 4 pens) per period.

	Control	Actifor® Boost	Actifor® Boost Effect	p-value
<b>Day 1-37</b>				
Average Daily Gain (g/day)	1238	1259	<b>+19</b>	NS
Feed intake (kg/day)	8.1	8.4	<b>+0.3</b>	
Feed conversion rate	6.5	6.7	<b>+0.2</b>	
<b>Day 38-66</b>				
Average Daily Gain (g/day)	1740	1683	<b>-57</b>	NS
Feed intake (kg/day)	10.8	11.6	<b>+0.8</b>	
Feed conversion rate	6.2	6.9	<b>+0.7</b>	
<b>Day 67-94</b>				
Average Daily Gain (g/day)	1577	1474	<b>-103</b>	NS
Feed intake (kg/day)	11.0	11.1	<b>+0.1</b>	
Feed conversion rate	7.0	7.5	<b>+0.5</b>	
<b>Day 95-128</b>				
Average Daily Gain (g/day)	1593	1599	<b>+6</b>	NS
Feed intake (kg/day)	10.7	11.0	<b>+0.3</b>	
Feed conversion rate	6.7	6.9	<b>+0.2</b>	

Table 6 summarizes the different carcass' parameters. Calculated carcass weight at the start of the trial shows no difference between groups, as for the other parameters, in accordance with the previous performance results; the use of Actifor® Boost provided the same benefits compared to monensin.

Table 6. Statistical analysis of the groups' carcasses' traits

	Control	Actifor® Boost	Actifor® Boost Effect	p-value
Duration (days)	128	128		
Cold carcass (kg)	257.1	251.0	<b>-6.1</b>	NS
Dressing %	57.0	56.4	<b>-0.6</b>	NS

## Conclusion

In the conditions of this trial, the use of Actifor® Boost led to similar growth performances and carcass results compared to a diet supplemented with monensin. Thus, Actifor® Boost appears as a good natural alternative to the use of antibiotics as growth promoters.