

Effect of Actifor[®] Boost on milk performances in highly productive lactating dairy cows

SINOFARM dairy farm (China)

Year: 2016

Aim of the trial

The purpose of this trial was to assess the effects on production performance of the additive Actifor[®] Boost on milk performances of highly productive dairy cows when compared with a control diet. Milk quality parameters (protein, fat and SCC) as well as milk urea were also considered.

Key words: dairy, milk performances, Actifor[®] Boost

Material and methods:

A total of 537 dairy cows were allotted according to parity, DIM, milk yield, milk protein, milk fat and SCC (characteristics of the initial selection are described in table 1).

Each group received the same diet during the whole trial except for the additive. In the rest of the document, groups are named according to their additive:

- Group 3: Control
- Group 4: Actifor[®] Boost (5g/cow/day)
- Group 5: Control

Table 1: Main characteristics of experimental groups before being physically separated.

	Group 3	Group 4 (Actifor[®] Boost)	Group 5
Number of animals	179	177	181
Parity	3.07±1.3	2.72±1.2	2.18±1.2
Days in milk (days)	121±42	115±49	117±42
Milk yield (liters/day)	42.2±3.4	41.2±4.4	41.4±3.3
Fat content (%)	3.78±1.00	3.75±1.23	3.69±1.02
Protein content (%)	3.23±0.27	3.19±0.60	3.16±0.33
SCC (x1000/ml)	385±1143	188±533	266±814

The following measurements were done monthly:

- Milk yield
- Fat content
- Protein content
- Lactose
- Total solid
- SCC

Figure 1: Experimental planning

Week	Pre-trial	Trial							
	0	1	2	3	4	5	6	7	8
Groups composition	537	179	179	179	179	179	179	179	179
		177	177	177	177	177	177	177	177
		181	181	181	181	181	181	181	181
Data									
Milk yield	X				X				X
Milk composition	X				X				X
Group 3 (Control)									
Group 4 (Actifor® Boost)									
Group 5 (Control)									

During the trial, all the cows have received the same TMR composition. The only difference to the diet was the addition of 5g/cow/day of Actifor® Boost on the TMR given to the Group 4.

Table 2: Diet's composition during the trial period

TMR ingredients	kg/cow/day
Corn silage	22.3
Oat hay	2.1
Alfalfa hay	0.8
Compound feed	13.1
Nucleo	2.6
Water	3.0
Total	43.9

This diet was elaborated for a milk production of 39.8 kg/cow/day and a body weight variation of +90 g/cow/day. The limiting factor was the relation RDP/Methionine.

The compound feed and the nucleo used in the TMR had the composition shown below.

Table 4: Composition of the Compound feed used in the diet.

Compound feed	
Raw material	%
Flaked corn grain	45.9
Extruded soya bean meal	2.3
Soya bean meal	37.3
Soya hulls	10.7
Whole cotton seed	3.8

Table 5: Composition of the Nucleo used in the diet.

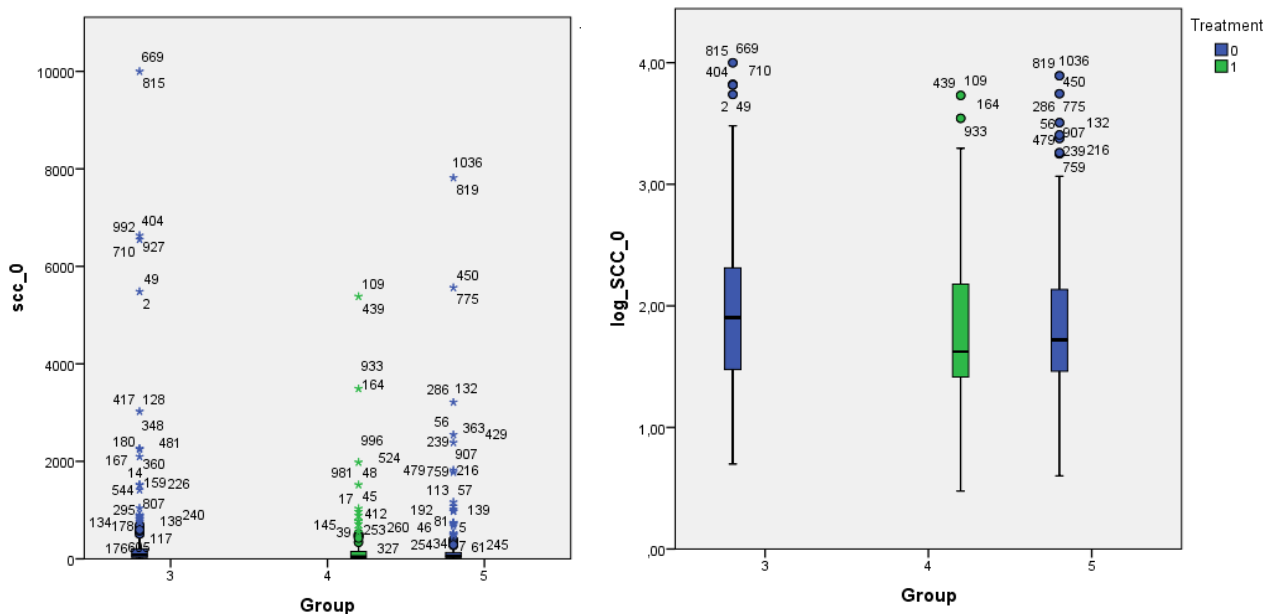
Nucleo	
Raw material	%
Corn grain	43.9
Bergafat	17.8
Salt	4.7
Limestone	8.5
Soda bicarbonate	10.4
Dry magnesia	1.5
Premix	4.6
Toxin binder	0.8
Bicalcic phosphate	5.4
Diamond V XP	2.3

Table 6: Analytic values of the TMR during the trial period for all groups.

Nutrients level	Value
Total intake (kg)	43.9
Total DM intake (kg)	21.9
NEL (MCal/kg)	1.82
DM (%)	50.0
CP (%)	17.6
RDP (%)	10.3
RUP (%)	7.3
Metabolized RDP (g/kg)	57.9
Metabolized RUP (g/kg)	64.4
Starch (%)	29.0
Sugar (%)	5.6
EE (%)	5.4
NFC (%)	45.7
ADF (%)	15.7
NDF (%)	28.0
Calcium (%)	0.82
Phosphorus (%)	0.45
Met (%MP)	1.75
Lys (%MP)	6.54

This farm had a serious problem of SCC and mastitis, as shown in the graphics below.

Graphic 1 and 2: SCC and log_SCC of the animals in the three different groups in the trial.



Results:

The measurement of milk yield showed us a positive effect of Actifor® Boost on milk production, with an average improvement of 1,3 liters/cow/day.

Graphic 3: Evolution of milk yield during the trial

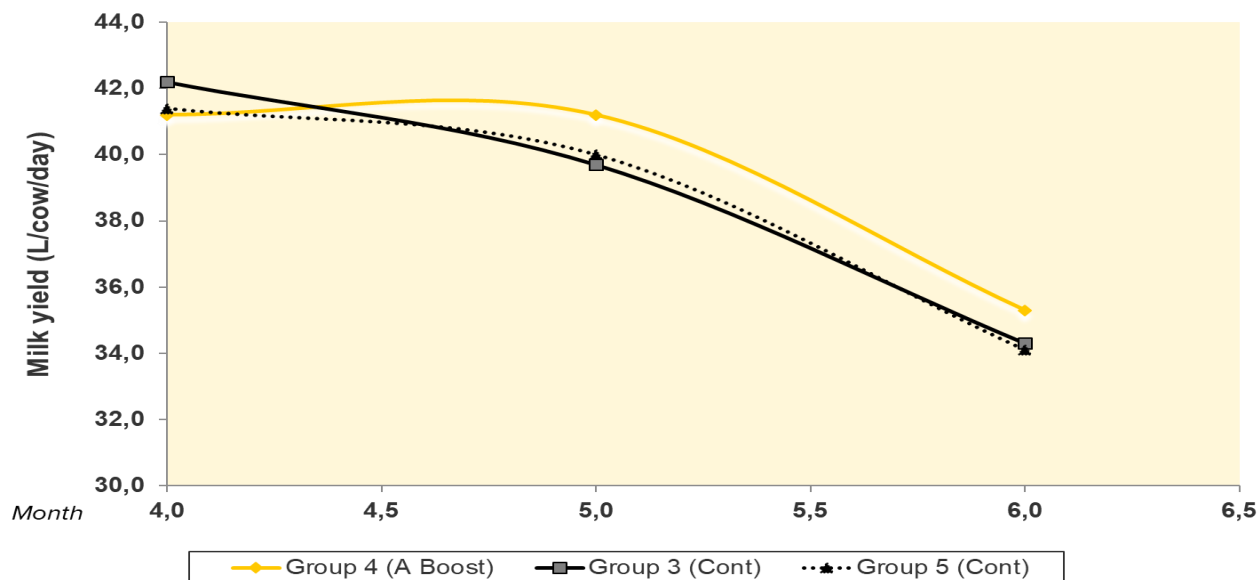


Table 6: Data compilation of the trial's records.

	Control (Group 3 and 5)	Actifor® Boost (Group 4)	Actifor® Boost Effect	P
Animal number	360	171		
Milk production	37.00 ^a	38.31 ^b	+1.31	<0.001
Milk fat (%)	4.031	4.111	+0.079	NS
Milk protein (%)	3.306	3.280	-0.026	NS
ECM¹ (kg/day)	40.75 ^a	42.15 ^b	+1.40	0.006
Lactose (%)	5.037	5.007	-0.030	NS
Milk protein (g/day)	1222	1242	+20	NS
Milk fat (g/day)	1489 ^a	1555 ^b	+66	0.018
SCC (log10)	1.919	1.975	+0.055	NS
MUN (mg/dl)	12.93 ^a	12.20 ^b	-0.73	<0.001
Dry matter (%)	13.074	13.085	+0.011	NS
Fat/Protein (g/kg)	1.219	1.253	+0.034	NS

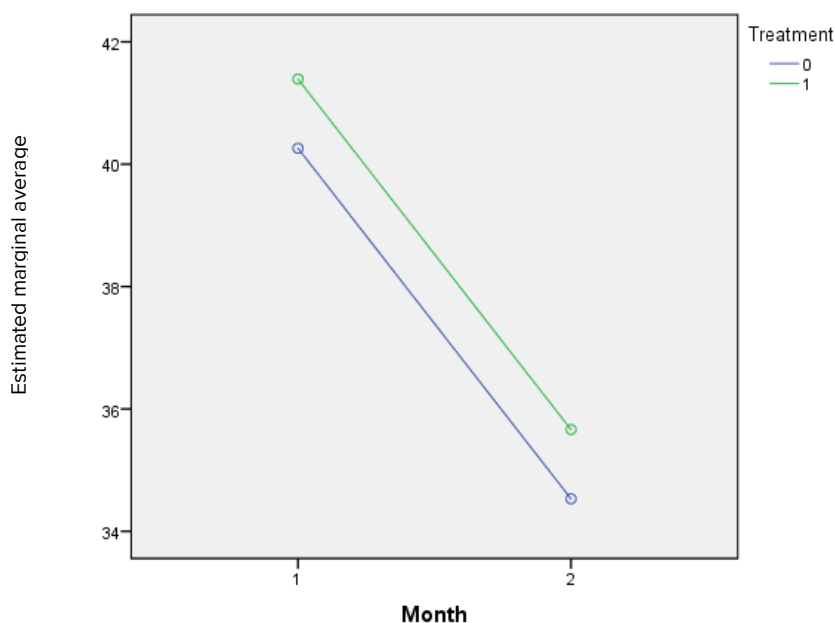
¹ECM: Standard milk*[(Fat*9.6)+(Protein*5.6)+(Lactose*4.2)]/[(38*9.6)+(32*5.6)+(50*4.2)].

^{ab} different superscripts within lines indicate levels of significance at P<0.05

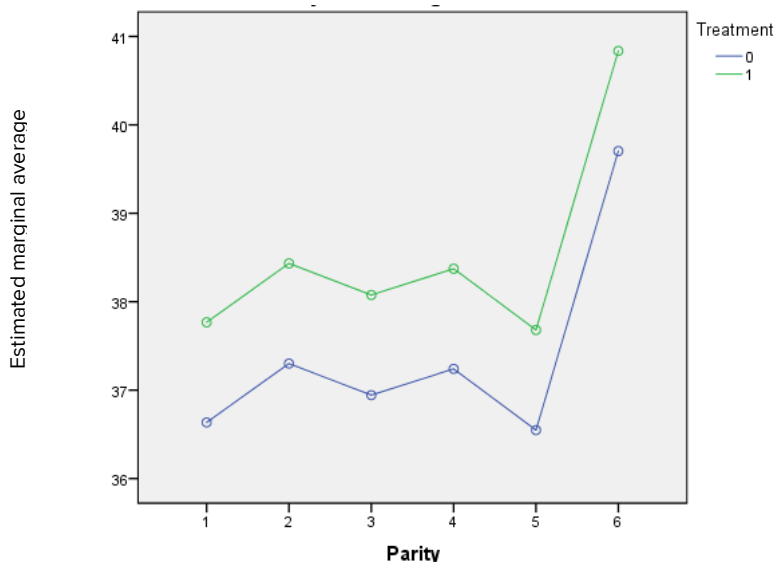
Results show also a positive effect on ECM (+1,4 kg/day) and milk fat (+66 g/day). One other important result was the reduction of milk urea (-0.73 mg/dl).

Statistic treatment of the results with milk production corrected with milk production (41.65 L) and day in milk before the trial (118.6 days).

Graphic 4: Estimated marginal average of milk for all animals during the 2 months trial.



Graphic 5: Estimated marginal average of milk for all animals during the trial according to their parity.



Data analysis show us that Actifor® Boost lead to an improvement of milk production during the first and second month and for all parity.

Conclusions:

In the conditions of this trial, the use of Actifor® Boost led to improvements on milk performances with +1,31 L/day compared to the control group and an increase on ECM of 1.4 L/day. This improvement was shown for all parties (from 1 to 6 lactations), after 1 and 2 months of trial and for all stage of lactation,

Concerning milk quality, there were no significant effects on protein, fat and SCC.

Regarding milk urea, there was a reduction by 0.73 mg/dl, that combined with the higher milk yield, show a higher protein efficiency from the Actifor® Boost group compared to the control.