Optimising sow performance using a probiotic

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Evaluating the productivity in sows in order to optimise sow performance should not be limited to litter performances determined by litter size and preweaning mortality. Analysis should include reproductive performances, sow feed consumption and sow replacement rates for a full picture in the assessment of the production costs.

Analysing production cost in the sow herd leads to a closer look at sow longevity and sow feed consumption or sow feed costs. Sow longevity, body condition and reproduction performances are very closely related as sows with a lower weight loss during first lactation have a significant larger litter size in the subsequent reproductive cycle and fewer days open.

Materials and methods

The aim of this field study was to assess the effect of a probiotic fed to gestating and lactating sows on sow litter performances, reproduction and sow mortality under practical conditions in high performing herds.

The study was carried out on four commercial sow operations with a total breeding stock of 4,023 sows.

	Control	BioPlus 2B	Difference
Weaned piglets per sow per year			
Herd 1	23.1	23.8	+0.7
Herd 2	27.6	28.0	+0.4
Herd 3	30.0	29.6	-0.4
Herd 4	27.8	28.0	+0.4
Average	27.1	27.4	+0.3
Preweaning mortality (%)			
Herd 1	15.4	13.5	-1.9
Herd 2	14.7	9.2	-5.5
Herd 3	10.3	10.1	-0.2
Herd 4	13.3	14.4	+1.1
Average	13.4	11.8	-1.6
Number of stillborn piglets per litter			
Herd 1	3.0	2.4	-0.6
Herd 2	2.3	2.3	-0.0
Herd 3	2.1	1.6	-0.5
Herd 4	2.0	1.7	-0.3
Average	2.4	2.0	-0.4

Table 1. Sow litter performance and reproductive parameters.

The performance level of the selected herds is high and similar to the top 25% sow herds in Denmark.

As it is very difficult to split the herd into a control and a treatment group, the control period lasted in the period July to December and the treatment period lasted from January to June, six months each.

Sows were fed in uniphase diet. BioPlus 2B was added at 400g/MT in the treatment period. In both periods sows were fed identical diets based on barley, wheat and soybeans. The energy level was 14.4MJ ME/kg (10.4 MJ NE/kg), crude protein levels at 16.8%, crude fat 7.6%, Lysine (SID) 0.81% and calcium at 0.98% and digestible phosphorous at 0.37%.

Piglets were weaned at 25 days of age. During lactation pre-weaning mortality was recorded and after weaning sow reproduction parameters were recorded. Piglet diets fed in the preweaning period were not fortified with BioPlus 2B and were identical through the overall trial period.

The field trial showed that the average number of piglets weaned per sow per year was improved by 0.3 piglets. The average preweaning mortality was reduced by 19% from 13.4 to 11.8% on average in the period where the probiotic was supplemented.

This reduction in preweaning mortality can be explained by higher nutrient supply to the infant pigs due to increased milk fat and protein content in the sow milk as shown in other experiments. Research has shown that the major reason for preweaning mortality is linked to starvation. Secondly, the probiotic expresses a strong inhibition on the growth and shedding of pathogens like E. coli in suckling piglets supplied BioPlus 2B via the sow.

Other pathogens like clostridia, staphylococcus, streptococcus and salmonella are shown to be inhibited by BioPlus 2B as well, having shown to limit outbreaks of meningitis in pig production.

Stillborn piglets

The number of stillborn piglets is reduced by 17% from 2.4 piglets to 2.0 piglets per litter.

Research on BioPlus 2B in sows has shown that weight loss during lactation and body condition of the sow at weaning is improved. This large scale field trial confirms the close link between body condition score of the sow at weaning and the reproductive performances of the sow in the subsequent litter.

As shown in Table 1 the average

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Fig. 1. Return to oestrus frequency.

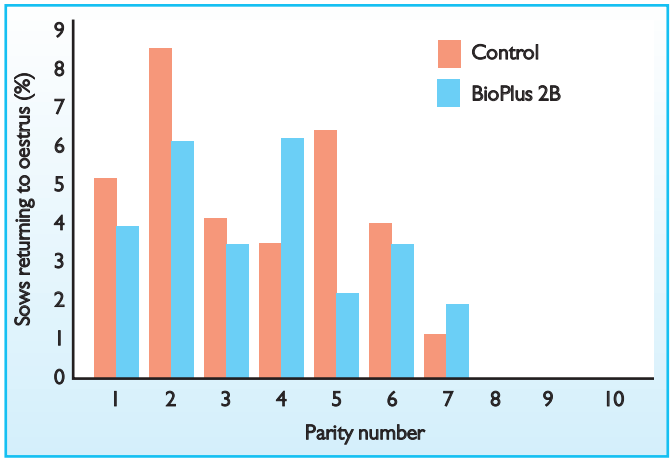
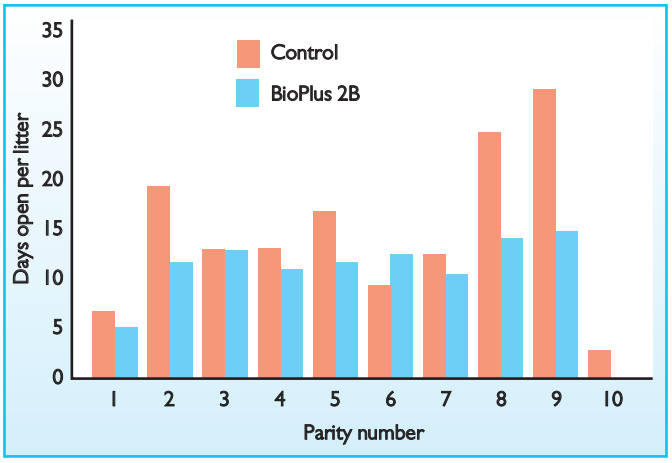


Fig. 2. Number of days open per litter.



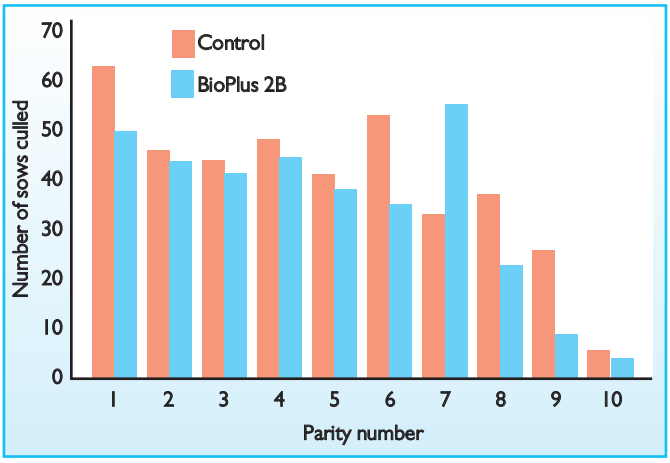


Fig. 3. Number of sows culled by parity.

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return to oestrus frequency in the four commercial sow herds is reduced by 33% from 4.1 to 2.7% (1.3% point). These results were confirmed in a fifth herd following the same design as the large scale field trial.

The results shown in Figs. 1 and 2 represent the average results of 1,494 and 1,458 inseminations of sows in the control group and sows in the experimental group receiving BioPlus 2B.

The results confirm that the reproductive performances in sows are improved, especially in parity two sows. In particular, gilts are known to milk hard compromising their body condition.

The consequences on the reproduction in the subsequent litter are shown in this study by reduced perception rates and more days open affecting significantly the profitability.

In this study the return to oestrus frequency was reduced by 32% from 6.2 to 4.3% and number of days open was reduced by 34% from 12.9 to 8.5 days open per litter.

These results are consistent with the findings in the above reported four herd field study.

The positive effect of supplementing probiotics to sow feed is not only limited to parity two sows but is improving reproductive performance across all parities and by this improving sow lifetime performance preventing young sows from being culled due to bad reproductive performances as it is confirmed in Fig. 3.

Fig. 4 confirms that sows in parity two to six get more live born piglets than parity one sows. Thus maximising sow lifetime performance starts with preventing sows having significant weight losses during lactation.

In conclusion, gestating and lactating sows fed diets supplemented with a probiotic improved their litter performances expressed as reduced preweaning mortality by 19%.

Furthermore, the reproductive performances were improved in terms of 32-33% reduced return to oestrus frequency and 34% less days open.

Improved reproductive performances across all parities and in particular in parity two sows is having a significant impact on sow lifetime performance as early withdrawal of sows due to bad reproductive performances, shoulder ulcers or other culling reasons is prevented. ■

Fig. 4. Number of live born piglets per litter by parity.