

YEAST PROBIOTIC SOLUTION IN HYPERPROLIFIC SOWS

to improve weaning piglet weight
& reduce mortality in lactation

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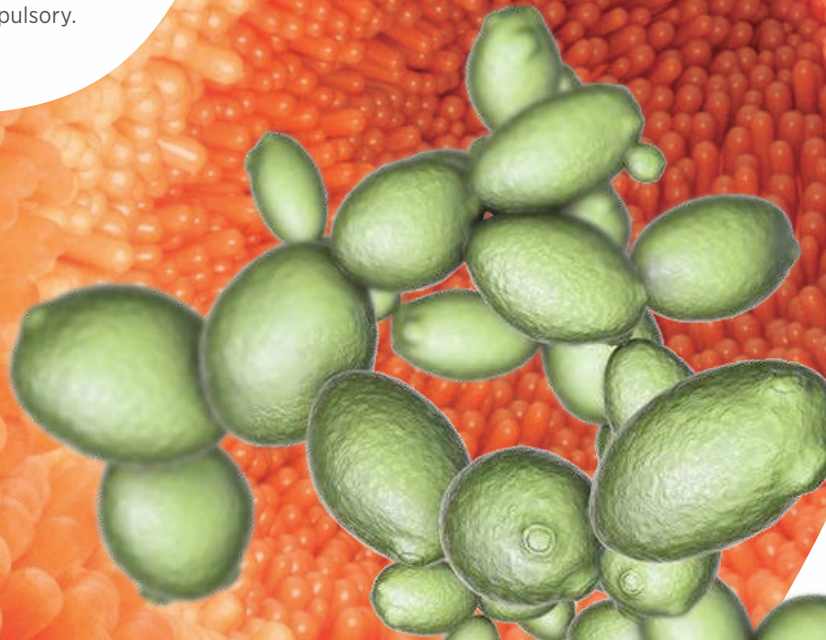
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With the collaboration of Iñigo Berroqui and his team

Farm manager (Los Alecos)

nutrition

Players in the swine industry are currently looking for **new ecological, functional and cost-effective alternatives** to meet the growing demand for products of high sanitary and nutritional quality. In the context of increasing bacterial resistance, measures to promote **responsible use of antibiotics** in farms become compulsory.



From lactation to weaning

An obstacle course for piglets



Use of hyperprolific sow lines is producing **smaller weaners** and therefore **more fragile piglets**:

! Litter weight at weaning can drastically be reduced

! A lack of immunity can induce an increase of suckling mortality

! The surviving piglets may have stunted

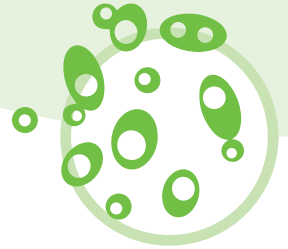


Stresses piglets face cause physiological changes that can have considerable economic consequences (*Campbell et al., 2013, Heo et al., 2013*):

! Digestive disorders of varying intensity and duration

! Reduced feed intake for 2 to 3 days (*Brooks et al., 2001, Bruininix et al., 2002*)

! Changes of gut mucosa (*Marion et al., 2002*) slower gut motility and gastric laziness (*Lallès et al., 2004*)



Taking care of piglets at early stage is becoming fundamental: **enhancing immune system by quality colostrum, encouraging feed consumption** as quickly and effectively as possible and **supporting health of the piglets** by taking good care of the sows are clearly essential.

Among possible strategies, **probiotics** are used to **promote the health and performance of animals** (*Kenny et al. 2011, Cheng et al. 2014*) and **probiotic yeasts** have been widely used to **improve intestinal health**.

Indeed, publications showed the **positive effect of the yeast probiotic *Saccharomyces cerevisiae* on the health and performance of sows** (*Jang et al., 2013; Jurgen et al., 1997; Zanella et al., 2011*) mainly linked to the **modulation of microbiota as well as by improving immunity of piglets** linked to a better quality of colostrum and milk (*Lizardo et al., 2008, Trockova et al., 2014, Posadas et al., 2017, Zanella et al., 2013, Trevisi et al., 2015*) and by reducing inflammation after an *E.coli* challenge.

To validate the **efficacy and benefits of supplementing the diets of gestating and lactating sows with yeast probiotic Actisaf® Sc47** (*Phileo by Lesaffre, France*) in the field, a study was carried out on a Spanish commercial farm looking at sows and suckling piglets's zootechnical performance.



Maternal feeding to optimize the full genetic potential

A Spanish commercial farm (1700 sows - 82 sows weekly, using Danbred genetic sow line and Topigs Duroc for the boar line) having zootechnical performance close to **36,7 weaned per sow per year**, decided to set up a trial to try solving **high challenges experienced in suckling period**, especially the control of the **mortality** and the **possible low weight at weaning**. Two batches were followed.

The sows were separated in **two groups (Control vs Actisaf®)**. To avoid parity effect, each group was composed of the same number of sows of similar parity (cycles from 2 to 6).

The groups (40 sows in average - **Table 1**) received a gestating and lactating sow's diet currently used in the farm. In addition, only sows involved in the **Actisaf® group** received the equivalent of 1kg/T of Actisaf® in a complete feed for the last 4 weeks of gestation and during whole lactation (**Table 1**).






	 Control	 Actisaf®
1st Replicate	36 sows	36 sows
2nd Replicate	44 sows	41 sows
Cycle (average)	4.07	4.09
Gestation Feed (Last 4 week)	Standard diet	Standard diet +1 kg/t Actisaf®
Lactation Feed (± 3 weeks)	Standard diet	Standard diet +1 kg/t Actisaf®

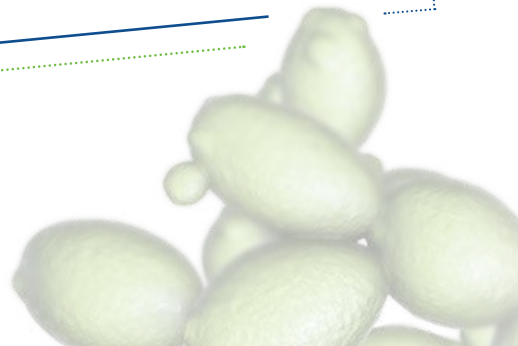
Table 1. Composition of experimental groups.

To follow the usual program provided by the farm, all the litters were **supplemented with milkreplacer containing another bacterial-based probiotic** during the whole lactation period. The cross-fostering - equalling to 16 piglets per sow - was done after the colostrum intake and within the respective groups.



During the study, the following data were registered for statistical analysis:

-  Litter weight at birth and at weaning, mortality during suckling period
-  Diarrhoea score
-  Number of weaned piglets were recorded by the manager of the farm



Better start...

Better performance at weaning!

ZOOTECNICAL PERFORMANCE AT BIRTH

Although yeast probiotic was added only the last 4 weeks of gestation, **the prolificacy of the Actisaf® group** was significantly better than the **Control group** (17.9 vs. 16.3, $P=0.016$ - respectively) while we did not expect an improvement in this parameter by applying Actisaf® only the last 4 weeks. As a consequence, a positive trend was observed for the litter weight at birth in **Actisaf® group** (20.8 vs 21.8, $P=0.242$) (**Figures 1 and 2**).



Having more piglets at birth is important, it is even more crucial to keep them alive and healthy until weaning!



Analysis of the data **obtained at weaning revealed a lower mortality (-13.6%)** in the **Actisaf® group**, even if no difference was recorded in the diarrhoea score during the suckling period (**Figure 3**).

MORTALITY DURING FIRST 21 DAYS OF LACTATION AFTER CROSS FOSTERING AT BIRTH

The number of piglets after 21 days of suckling was higher by 0.35 piglets in **Actisaf® group** compared to **Control group** (14.45 vs 14.10 respectively - **Figure 3a**). Litter weight was also significantly increased from 64.2kg in **Control group** to 70.0kg in **Actisaf® group** ($P=0.037$).

This result allows to get an **increased growth of the Actisaf® group** by + 4.8kg piglets raised (**Figure 5**).

After 21 days of lactation, we observed that the piglets coming from the **Actisaf® group** are **245 g heavier** compared to the **Control group** (**Fig 6**), showing that the **supplementation of the sows supports the production of colostrum and milk of good nutritional quality**.



Figure 1. Prolificacy at birth of the Control and Actisaf® groups

*means significant difference $P<0.05$

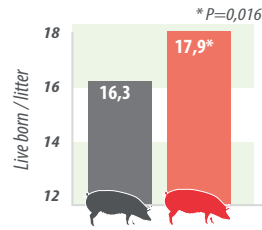


Figure 2. Litter weight at birth



Figure 3. Mortality during first 21 days of lactation after cross fostering at birth.

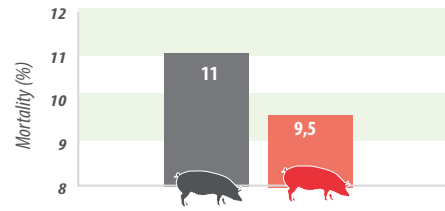


Figure 4. Litter size at 21 days of lactation

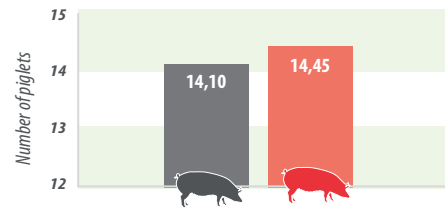


Figure 5. Litter weight at 21 days of Lactation

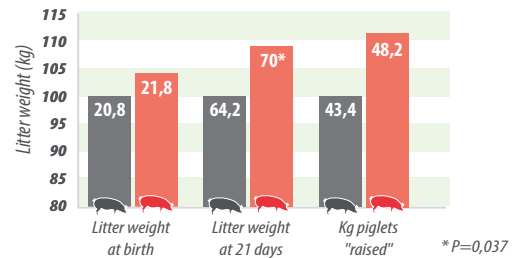
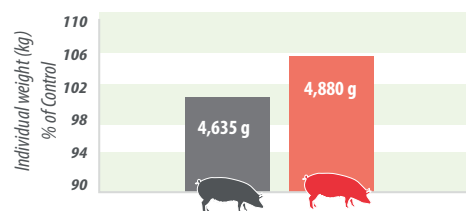


Figure 6. Individual piglet weight after 21 days of lactation



nutrition

Probiotic solution

How does it work?



This study carried out on a large farm, representative for Spanish pig production, showed that the **addition of Actisaf® Sc 47 at 1kg/t** from the last 4 weeks of gestation until end of lactation **improves the litter size** (+0.35 piglets) and the **litter weight** (+5.8 kg) at 21 days of lactation. **A decrease of suckling mortality by 13.6%** was also observed. Finally, at **21 days of lactation, +4.8kg of piglets raised per litter have been gained!**

These results are fully in line with the trials made to obtain the registration of Actisaf in Europe and the several results seen worldwide.

As the aim of this study was to improve the zootechnical performance in lactating sows and their litters, by addition of commercial natural probiotic preparations in the diets of gestating or lactating sows, the results obtained in the present study allow to indicate that **feeding sows with Actisaf Sc47® improves their health status, as well as the health status of their piglets and reduces preweaning piglet mortality (-13,6%)!**

Greater number of piglets per litter and higher litter weight at weaning suggest that piglets born from sows in the **Actisaf® Group are stronger compare to the ones in Control group**. It can be related with a better **colostrum and milk quality and possibly quantity**.



Higher preweaning piglet's mortality in the litters of the **control sows**, can be primarily due to more fragile piglets at birth, and also as a result of significant reduced milk production and/or Ig in colostrum and milk.

Yeast probiotic

A promising solution!

Actisaf® supplementation 4 weeks before farrowing until end of lactation period is a consolidated solution to **improve the colostrum and milk nutritional and immunologic quality to develop a good gut health status of the litter, and ultimately to support the litter performance** during the lactation. Supplementing **Actisaf®** in sows is a **tested strategy to improve litter weight at weaning**.