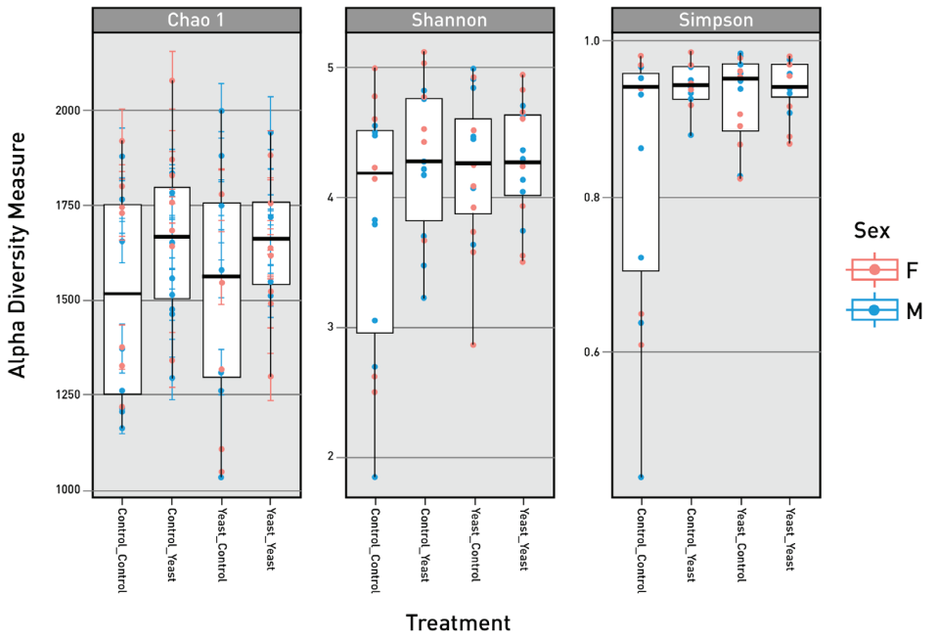
ActiSaf HR+ in sow feed improves baby pig growth after weaning across different genetics, feeding programs and health status

Dr. Joe Loughmiller
North American Swine Technical Services, Phileo by Lesaffre

New research from Phileo by Lesaffre continues to demonstrate the practical benefits of feeding ActiSaf HR+ to brood sows. This work follows results shared last year that demonstrated the value of feeding 0.5 – 1.0 lbs/ton of ActiSaf HR+ to sows in gestation and lactation.

Past ActiSaf HR+ research trials by Phileo demonstrated benefits in the nursing pig's microbiota balance (Figure 1 and 2). Because ActiSaf HR+ survives throughout the sow's GI tract and feces, nursing piglets are inoculated with ActiSaf while in the farrowing crate, with subsequent effects on their developing microbiota. Further Phileo research showed improved colostrum immunoglobulin levels, and increased weight gain and cost/lbs gained of piglets after weaning (Table 1) that is most likely a beneficial result of this improved microbiota balance.

Figure 1: Feeding ActiSaf HR+ live yeast probiotic to pigs before and after weaning improves microbial diversity within individual pigs. *(Kiros et al., 2018)*



Those pigs were fed commercial, North America style diets containing high ZnO and CTC/Denegard antibiotics after weaning and still observed improved carryover performance when weaned from sows fed ActiSaf HR+. The pigs also were diagnosed with an acute PRRSv infection along with other co-infections by sample submission to the ISU VDL. Regardless of other gut microbe modifiers like ZnO and antibiotics, pigs from sows fed ActiSaf HR+ had better weight gain; tended to have lower cost/lb gain and mortality. Because ActiSaf HR+ helps modify the microbiota of the nursing piglets, this carryover performance benefit should be observable under different conditions including stable, high-health status, different genetics, and different environment and farm management.

Figure 2: Feeding ActiSaf HR+ live yeast probiotic to pigs before and after weaning reduces microbial variation within pigs fed the same treatment . *(Kiros et al., 2018)*

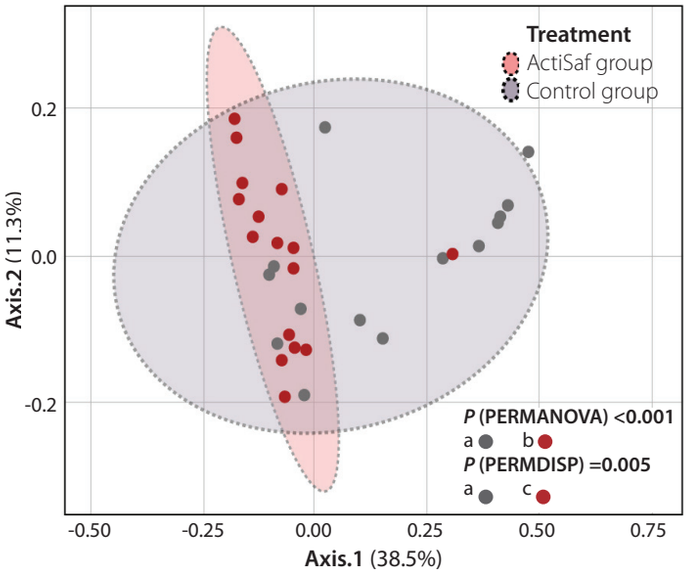


Table 1: Carryover effects of feeding ActiSaf HR+ at 3 doses to sows on weaned pig body weight from d 0-42 after weaning. *(Phileo by Lesaffre, 2019)*

	Sow ActiSaf HR+ treatment[1]			
	Control	Continuous	Step-Up	Prob. (P<)
Initial BW, (lbs)	12.2^{B}	12.5^{A}	12.0^{C}	<0.001
D 12 BW, (lbs)	16.9^{C}	17.9^{A}	17.4^{B}	<0.001
D 23 BW, (lbs)	24.1^{B}	25.7^{A}	25.2^{A}	0.001
D 42 BW, (lbs)	39.7^{B}	42.4^{A}	41.6^{AB}	0.009
Net Wt. Gain, (lbs)	27.5	29.9	29.6	-
$/lb gain	0.256	0.246	0.244	0.06
Mortality, (#/pen)	0.80	0.55	0.30	0.08

[1]ActiSaf HR+ treatment **Continuous** was 0.5 lbs/ton gestation and lactation. ActiSaf HR+ treatment **Step-Up** was 0.5 lbs/ton gestation and 1.0 lbs/ton lactation.

Thus, this research was designed to further define and verify the earlier postweaning performance benefits observed from feeding ActiSaf HR+ to sows. In contrast to the earlier research reported in Table 1, this research fed a combination of ActiSaf HR+ live yeast with SafMannan, our premium yeast cell-wall extract to maximize potential effects on the sow and litter during the lactation period, with no yeast products fed in gestation.

In this trial, we used 360 pigs (DNA Genetics; initially 19 d of age, ~11.2 lbs) were sourced with negative PRRS, PEDv and M. hyopneumonea status from the KSUSTRC. The pigs were weaned from an equal number of multiparous sows fed a no yeast control diet or a diet containing 0.1% and 0.05% ActiSaf HR+ and SafMannan, respectively. Each of weaned pigs was mixed sex with 5 pigs/pen with 18 pens per treatment. Pens of pigs were weighed at d 0, 7, 24, and 45.

Treatments were arranged in a 2x2 design with the sow treatment and 2 nursery feed treatments with pen as the experimental unit. Sow and nursery treatments were control or Phileo premium yeast products, respectively. In contrast to the previous trial reported in Table 1, this nursery feeding program did not contain pharmacological levels of ZnO or in-feed antibiotics.

No main effect or interactions were observed for the nursery feed treatments. This is consistent with our previous results from 2019 as well as that of Lu et al., 2019 (JAS), who also reported beneficial carryover effects from feeding live yeast to brood sows, with no effect of nursery feed treatment. No differences in mortality and morbidity were observed in this trial. Pigs from sows fed ActiSaf/SafMannan had higher ADG and ADFI versus pigs from control sows ($P < 0.05$; Figure 3). Pigs from sows fed ActiSaf/SafMannan in lactation also had heavier bodyweight on each weigh date ($P < 0.001$), and lower estimated cost/lb gained (Figure 4). Pigs from sows fed ActiSaf/SafMannan had improved weight gain of 2.7 lbs from d 0 to 45 versus pigs from control-fed sows without these premium yeast products.

We previously established that the nursing pig's microbiota is beneficially affected when exposed to ActiSaf. When combined with the results observed in the other trials referenced in this report, it is apparent that feeding the premium yeast products ActiSaf and SafMannan in combination to sows during lactation provided improved long-term growth performance and survivability benefits, with lower cost of production. The use of ActiSaf and SafMannan premium yeast products provide another valuable nutrition tool that helps improve productivity and profitability across various genetic lines, health conditions, feeding programs and farm management protocols.

Figure 3: Figure 3. Feeding ActiSaf HR+ and SafMannan to lactating sows improves weaned pig growth performance for entire nursery period from d 0 to 45 after weaning. *(Phileo by Lesaffre, 2020)*

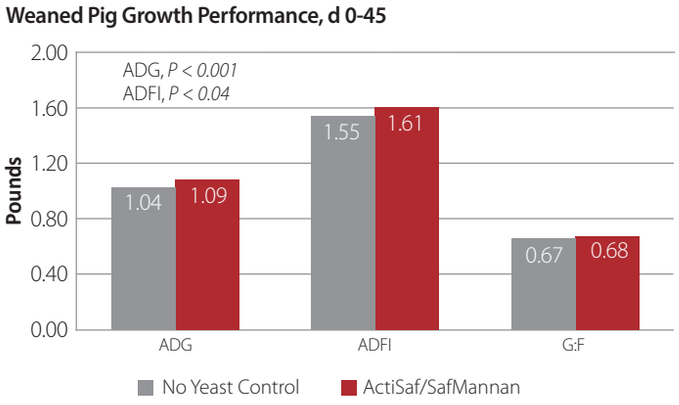
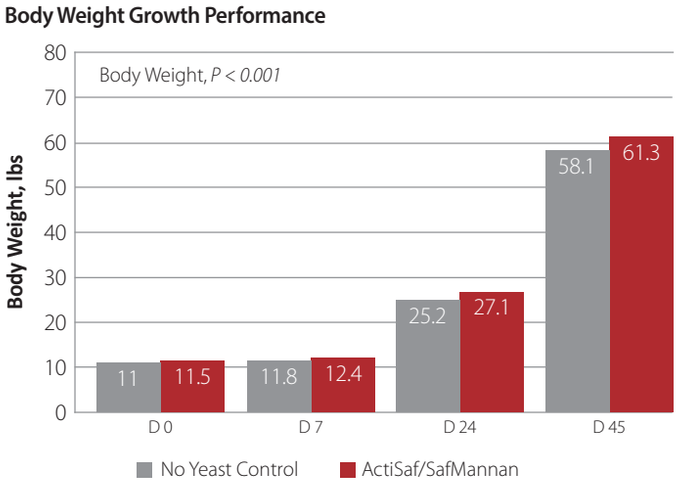


Figure 4: Feeding ActiSaf HR+ and SafMannan to lactating sows yielded higher piglet body weight at each weigh date after weaning. *(Phileo by Lesaffre, 2020)*



Calculated $/lb gain: Control = $0.252; AS/SM = $0.247