



## Effect of Aleta™ on Nursery Pig Health and Growth Performance in a Commercial Large-Scale Trial<sup>1</sup>

### ABSTRACT

Aleta™ has been shown to improve growth performance and decrease mortality in nursery pigs by boosting the immune response to pathogens.<sup>1,2,3,4</sup> The objective of this study was to evaluate the effect of Aleta on nursery pig performance in a Midwestern commercial farm side-by-side room comparison. The pigs were weaned (18- 20 day old) from three sow herds that were porcine reproductive and respiratory syndrome virus (PRRSv) and *Mycoplasma hyopneumoniae* negative. Pigs were weaned into the nursery rooms and housed for 41 or 42 days. All pigs were fed a one- pound receiving diet for 5 days and then fed either control or Aleta (200g/ton) diets up to 42 days. More than 300,000 pigs were weaned into 388 rooms with 283 control and 105 Aleta rooms. Data collected included stocking density (%), days in room, weight in, weight out, average daily gain, kg of feed per head, feed efficiency, mortality (%) and livability (%). Pigs in the Aleta rooms were fed for 41 days, and pigs in the control rooms were fed for 42 days for managerial reasons. Stocking density in the rooms, pounds of feed fed and feed efficiency were similar across the treatments. Pigs fed Aleta had significantly improved average daily gain ( $P = 0.04$ ), decreased mortality ( $P = 0.01$ ) and improved livability ( $P = 0.07$ ). Overall, the pigs fed Aleta had a 5:1 return on investment compared to those that were fed the control diet.

### INTRODUCTION

Aleta is a non-medicated feed additive and bioavailable source of 1,3-beta glucans which can minimize the animal's susceptibility to disease challenges by priming the immune system. The 1,3-beta glucan bioavailable granules have been shown to be readily taken up by macrophages *in vitro* and enhance innate immunity *in vivo*.<sup>5,6,7,8</sup> The recommended feeding rate of Aleta for swine is 200g per ton of complete feed. When fed to PRRSv-positive weaned pigs that were administered in-feed antibiotics, Aleta demonstrated a positive effect on growth, feed conversion ratio and pig morbidity.<sup>1,2,3</sup> Aleta has also been shown to improve gut barrier function in a swine *Escherichia coli* challenge model by stimulating T cell activation and reducing gut inflammation.<sup>4</sup>

The objective of this study was to evaluate the effect of Aleta on nursery pig performance in a commercial large-scale setting using a side-by-side room design. To achieve this objective, the study was conducted at a Midwestern production company using multiple rooms of nine different nursery sites in the same geographical region over a ten-month period (February to November 2020).

### MATERIALS AND METHODS

#### *Pigs and Facilities*

Mixed gender pigs sourced from three different sow farms (negative for PRRSv and *Mycoplasma hyopneumoniae*) were weaned each week at approximately 18-20 days of age and randomly assigned to either a control or Aleta treatment room (Table 1). Each room contained pens with one self-feeder and a nipple/bowl waterer to provide *ad libitum* access to feed and water. The rooms were located on nine nursery sites in the same region at a midwestern production company. Room capacity ranged from 400-1500 head per room, with a stocking density of two square feet per pig. During the entire evaluation period, nursery health, growth and performance metrics and room close out data on average daily gain, feed intake, feed conversion and mortality were collected. The farm veterinarian determined the health program for the herd. Pigs were administered an oral *E. coli* vaccine and a killed *Streptococcus* vaccine at weaning. Vaccinations and antibiotic treatments were used at product label recommendations and were similar across treatments.

**Table 1.** Details on number of rooms, total pigs, number of pigs per room and stocking density

Treatment	Control	Aleta™
Number of rooms	283	105
Number of pigs	227,045	76,366
Number Pigs per Room	780 ± 19	720 ± 27
Stocking Density, %	98.1 % ± 0.73	98.6 % ± 1.05



### Treatments

All pigs received a common pelleted Phase 1 diet for five days post weaning. The experimental diets, Phase 2-4 diets, were manufactured at a commercial feed mill and were fed in meal form. Phase 2 feed had chlortetracycline (CTC) and Denagard® (Elanco Animal Health, Greenfield, IN) included in the feed. All other phase diets were antibiotic free. The control (no Aleta) or Aleta (200g/ton) treatment feeds were fed from day 5 through day 42 after weaning. Feeding phases were: Phase 2: days 5-12; Phase 3: days 12-26; and Phase 4: days 26-42. The total feed budget per pig was 24kg/pig.

### Data Collection

The farm manager collected and recorded data from each nursery room using a Smart Farm™ systems database (Smart Farm Systems, Inc., Nicholasville, KY). Data collected were: group ID, farm ID, Aleta use (yes or no), nursery flow ID, average finish days, stocking density, head placed, mortality, livability, placed avg kg, finished avg kg, feed conversion, average daily gain (ADG) and feed kg/head finished. The data set included nursery rooms that were closed out between February 2020 and November 2020. Pigs fed control diets were removed on day 42, and pigs fed Aleta were removed on day 41 from the nursery rooms due to the producer's capabilities and logistics in emptying the nursery rooms. Pig weight data was collected using truck weights.

### Statistical Analysis

The dataset was analyzed as a completely randomized design using JMP® (SAS Institute, Cary, NC). The experimental unit was the nursery room. A location analysis identified extreme outliers ( $\pm 2$  standard deviations) and excluded them (<1% of records) from the analyses. The least square means were calculated by treatment using 1-way ANOVA function of JMP and means were compared using Tukey's HSD test.

## RESULTS

More than 300,000 pigs were weaned into 388 rooms and fed either a control diet or Aleta to evaluate the effect of Aleta on nursery performance in a commercial setting. Although the Aleta-fed pigs were placed in smaller rooms based on logistics of the farm, the room density across treatments was similar at 98% as shown in Table 1. Due to management schedules, there was a one-day difference between the duration of treatments in the rooms, in which control-fed pigs were in their rooms for 42 days and the Aleta-fed pigs for 41 days. The weight out improvement with Aleta-fed pigs versus control-fed pigs resulted in a significant average daily gain improvement ( $P = 0.04$ ; 0.91 versus 0.89 respectively) despite the one-day difference in treatment duration. There was no difference in feed intake or feed efficiency between treatments. Mortality was significantly improved ( $P < 0.01$ ) by feeding Aleta (2.36% vs. 2.75%, respectively). Livability tended to be improved ( $P = 0.07$ ; 97.5% vs. 97.1%, respectively) by feeding Aleta.

**Table 2.** The Effect of Aleta™ on Nursery Performance

Metric	Control		Treatment		P-value
	Mean	Standard Error	Aleta™	Standard Error	
Days in Room	42	0.12	41	0.17	0.0001
Pig Weight In, kg	5.8	0.03	5.8	0.04	0.29
Pig Weight Out, kg	22.6	0.22	22.8	0.32	0.17
Average Daily Gain, kg/day	0.40	0.005	0.42	0.008	0.048
Kg of Feed per Head	24.18	0.33	23.95	0.58	0.47
Feed Efficiency	1.43	0.01	1.41	0.02	0.27
Mortality, %	2.75	0.08	2.36	0.13	0.01
Livability, %	97.10	0.09	97.50	0.15	0.07

Mean  $\pm$  Standard Error

## CONCLUSION

There are a variety of factors that exist in a commercial production facility that can have drastic impacts on performance such as variability with seasonal changes, management, facility, feed and health. Despite the various factors, there was a significant effect of Aleta on ADG and mortality. The importance of having pigs start well after the stressful event of weaning is key in the nursery phase for overall pig performance. A previous study has shown that pigs with improved nursery growth rate had greater age-adjusted final weight and hot carcass weight compared with their slow growing nursery contemporaries.<sup>10</sup> Furthermore, the industry recognizes that one percentage improvement in mortality is worth \$1.00 per pig.<sup>9</sup> Mortality was significantly improved in this study by 0.39%, resulting in an increased \$0.39/pig value. Based on this trial, Aleta fed pigs are more robust and resilient throughout this phase.

## REFERENCES

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